THE

DENTAL COSMOS:

A

MONTHLY RECORD OF DENTAL SCIENCE.

Devoted to the Interests of the Profession.

EDITED BY

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Observe, Compare, Reflect, Record.

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THE

DENTAL COSMOS.

NEW SERIES.

VOL. XIII. PHILADELPHIA, JANUARY, 1871. No. 1.

ORIGINAL COMMUNICATIONS.

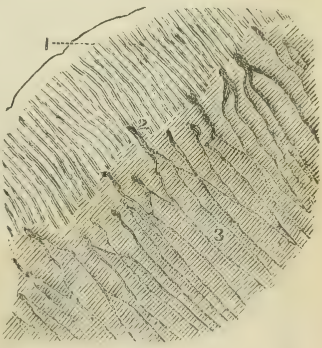
THE DISCOVERY OF NERVE FIBRES IN THE SOFT SOLIDS OF THE DENTINE.

BY GEORGE B. HARRIMAN, D.D.S., BOSTON, MASS.

THE theories on the sensitiveness of the dentine are various; their consideration is a little instructive, but more amusing. By some writers on the subject this sensitiveness is attributed to "nervous irritability," "deficient growth of the maxilla," and to "changes in the system on the arrival of puberty." Other writers refer this sensitiveness to "local chemical action" and the "pathological condition of the system;" others affirm, whilst accounting for this sensitiveness, that "we must of necessity fall back upon the supposition that dentine is the conductor of impressions to the pulp!" The absurdity of this last theory must be evident to any mind in the least conversant with pathological laws; and yet it is as philosophical as any of the others specified above.

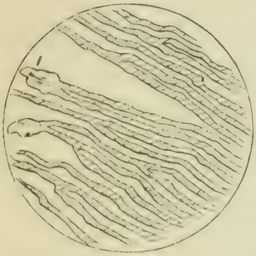
On making a microscopical section of a tooth, and when the slab is reduced by polishing to desired thinness, and is transparent, the so-called "tubuli," the dark, thread-like lines, may be seen, with the aid of proper magnifying power. If the section is longitudinal, small, rounded spots will be likewise visible. Now, in the first place, were this part of the tooth hollow, as many allege, the eye would readily observe, with microscopic aid, these apertures—but they are not seen. Again, make this hard substance disappear by the application of mineral acid, and the residuum will be a cartilaginous substance, proving conclusively that the so-called tubuli are real tissue; more than this—after the base substances have been dissolved, this cartilaginous tissue is of twice the bulk of the dentine and soft solids before the application of the acid. Why is this?

Cut 1.



In my article in the May number of the *American Journal of Dental Science*, it was stated that these substances swell when released from surrounding substances. Cut No. 1 in this article represents a thin section of a molar tooth (of a young lady of twenty years), which was made by sawing a thin slab and polishing till it became transparent, and is magnified about seven hundred diameters. Figure 1 in this cut points to the enamel; figure 2 shows the thread-like lines, which are nothing more nor less than real fibres, one of which has penetrated a short distance into the enamel, and is there joined by other fibres near the junction of the dentine and enamel; figure 3 shows the lime salts or dentine. It may be noticed that Cut No. 1 very much resembles others prepared by different microscopists, and should they view this specimen (as they can by calling at my office, where it will be preserved) under the microscope, they would, I have no doubt, all pronounce these thread-like lines, designated by figure 2, "tubuli," although, as I have shown, tubuli do not exist in the dentine.

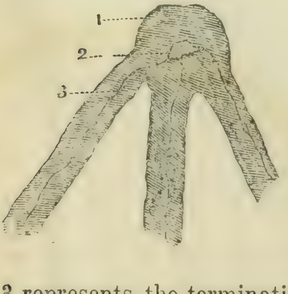
Cut. 2.



The accompanying cut, No. 2, is magnified three hundred and sixty diameters, and represents a section made from the same tooth as above in cut No. 1, and is a thin shaving turned off, with the hard part cleared away by hydrochloric acid. A thin section can be made of any desired size by confining the tooth in a piece of wood, and making the wood fast in a lathe, with a carriage running in a rack, and a tool-post to guide the cutting instrument, as described in the aforesaid journal. Sections of bone can be made in the same manner. Figure 1 in this cut shows where the fibres form a junction, and it is within these fibres that *I have discovered a small nerve fibril, which is represented and illustrated in the cut, No.* 3, *below.*

It will be noticed that the junction of fibres is made near the enamel, and that the lime portion has been removed by the action of acid, and magnified about three thousand diameters. With the use of terchloride of gold—the composition of which is three atoms of chlorine to one of gold—I have been enabled, after long and patient toil, to dissect out some of these nerve filaments, which are less than a fifty-thousandth of an inch in diameter.

Cut 3.



Unless great care be exercised, the thread-like lines (fibres) in cut No. 1 will be mistaken for nerve fibres. Figure 1 in cut No. 3 represents the termination of the fibres where in this instance they

unite. Figure 2, in the same cut, presents the ganglion cell, in which can be seen three small nerve filaments. Figure 3, in the same cut, points to one of the small nerve fibres running from the pulp, and constituting a junction at ganglion, 2. Careful attention to the preceding considerations and illustrations must have satisfied the reader of the cause of sensitiveness in the teeth. It may therefore be interesting to contemplate a treatment of this sensitiveness which has proved very successful in my practice. I first moisten a small pellet of cotton in chloroform, and add to the pellet about the fortieth of a grain of iodoform; place this in the cavity to be excavated, and seal as tight as possible. Two or three days will be required for the iodoform to dissolve. I have found this preparation to be invaluable. Local anæsthesia is produced, and no deleterious effects ensue.

Arsenious acid, aconite, chloride of zinc, nitrate of silver, carbolic acid, tannic acid, etc. have been recommended by various writers upon sensitive dentine. But chloride of zinc causes excruciating pain, and the sensation remains as keen as it was before it was applied. Arsenious acid is very reliable in blunting the sensibility, but it should be used, if used at all, with great caution, as the number of discolored teeth that can be traced to its application is very numerous. Before using mineral caustics to destroy the sensibility prior to excavating a cavity, I should most decidedly recommend the administration of anæsthetics in those cases where the introduction into the cavity of the chloroform and iodoform would not produce the desired effect.

THE FILE.

BY THOS. C. STELLWAGEN, M.D., D.D.S.,

PROF. OF OPERATIVE DENTISTRY AND DENTAL PATHOLOGY IN PHILADELPHIA DENTAL COLLEGE.

Read before the Odontographic Society of Pennsylvania.

The file is probably the most ancient, and perhaps the most abused, instrument for the treatment of dental caries. In the works of Aëtius we first find its use recorded, and this author is supposed to have written about 540 A.D., or, according to others, born about 455 A.D. Both friends and foes have dealt severe blows against its use; the former, by unskillful manipulations, often giving to the latter opportunities to report failures.

For more than thirteen hundred years it has stood the storm, yet, founded on true principle, it has endured until this time without any signs of waning strength. It now looks so lusty and robust, that it seems to be in its prime of life. The victor over ages and centuries of time, at a moderate estimate, it has overthrown half a hundred of generations of opponents, many of whom have long since crumbled and

mouldered into dust, yet its services are more valuable and its temper more perfect than ever before.

Should we hesitate in proclaiming ourselves as advocates of a principle in practice, that has been criticised only severely in proportion as it has been successful in arresting the progress of disease? There have been times when fanaticism so ruled that proud men dared not favor adverse theories to those prevailing, even in that all-important matter of religion itself. Can we wonder that many have lately been deterred from urging the use of the file, lest they should awaken an opposition which, in sorrow we admit, was embittered by unhesitating vituperation. The vexed question no sooner seems settled than we meet new phases, for

> "Truth crushed to earth will rise again;
> The eternal years of God are hers."

In all these ebbs and flows may be traced a reason for the changes; there is in the use of this instrument a happy medium, which is a solution to the dispute. The governing principle has been forgotten, and in the turmoil personalities have been substituted with disastrous results to both sides,—since both lose by going too far.

Do we not operate to save teeth and make them useful? If so, we at once have the fundamental point of the argument in a few propositions,—

I. The exciting cause of caries acts most readily upon those surfaces of teeth that are not kept free from long-continued lodgment of food.

II. All treatment should aim at the permanent removal of this cause, as perfectly as possible, with the least liability to a return of the condition, or actual detriment to the parts.

To the first, believers in the vital, the chemical, the chemico-vital, or the parasitic theories, may accord. It is the continued irritation, chemical action, or contact, germination, and growth of the spores of the plants, or eggs of the animalculæ, that are admitted as the exciting causes. The first two must have time to act, the latter to germinate and grow To the second proposition some may demur, yet it is no less plain than the first; it simply means "remove the cause and the progress of the disease will be arrested." If the latter could be accomplished, and the lost parts restored with healthy dentine and enamel, the result would be the perfection of dentistry. In our present state of knowledge this seems impossible. The union of a wound of the soft parts is not all that is required by this proposition, and to attempt this with a tooth is hopeless. When the death of a part of the highly vital tissues has been extensive, all that can be expected is the repair by cicatricial tissue, which is far inferior to the original before it became diseased,

inasmuch as it has less vitality, less strength, and is liable to break down from very slight causes.

A moment's consideration will show that the cause can only be removed by strict attention to cleanliness; and it needs not to be proved that if the same shape which favored the lodgment of the food is allowed to continue, it is seldom that any other than similar results will follow.

For the sake of argument, suppose it possible—first, to so mould or alter the shape of the tooth as to have the surface self-cleansing; would it not be the best? Second, if the contour of the tooth is strictly reproduced in gold, do we not have the greatest possibility of the recurrence of disease, unless the whole surface upon which the cause acts be rendered imperishable, or is plated with some indestructible material? Third, the system, the fluids of the mouth, or the food retained between the teeth, may be so altered that the exciting cause is suppressed.

The first of the above, in our present state of information, involves principles not yet understood, to say the least of it. The second is possible where the cavity is such as to require a filling that will cover the whole surface. The third we may do much with by means of antacids and systemic treatment; but it requires that the patients should be able to reach these localities themselves.

Let us consider without prejudice what the result will be if the teeth are so altered by a removal of tissue that will accomplish most readily the moulding of them to a proper shape to cleanse the surfaces by the natural acts of mastication. Then if the parts could be reinvested with enamel, but few would object to the operation. But is this covering of enamel always essential? No! When incisor teeth are slightly broken on their cutting edges, yet not enough to interfere with their use, or their pulps, is there any one who would deem it necessary to do more than smooth and polish off the roughness? Many can cite instances where this condition has been satisfactorily obtained. Again, there are, in the mouths of nearly all who have attained advanced age, teeth that from attrition have had their dentine exposed; but it is so smooth and free from all accumulations as to be perfectly healthy.

The teeth of lower animals show examples where enamel, dentine, and cementum are uncovered when in a normal condition. This will be found to be the case in the rodents and many of the herbivora. The marks on the teeth by which the jockey judges of the age of a horse, all dentists know, are due to the dipping down of the three substances on the cutting edges and the gradual wearing away of the walls of the pits.

If this does not prove the fact that enamel is not essential for preservation from caries, an examination of cases where filing has been

properly practiced will; and it is with these we may deal with more certainty than the finest-drawn theories.

The principle is one of the most reliable of the modern school of dentistry, and there are thousands of cases where filed teeth have resisted disease longer than those (in the same mouth) covered by enamel. When we compare the properly filed tooth with one that has been properly filled, the difference in favor of the former is still greater.

TWO CASES OF FRACTURE.

BY WM. G. A. BONWILL, M.D., D.D.S., DOVER, DEL.

Compound Fracture of Root of the Right Superior Central.

I am not aware that a case similar to the following has appeared on record. If so, I must plead innocent of having seen it. Whether it be so or not, it will not be amiss to give the history of this.

I was called upon to treat the roots of the superior central incisors. The crowns had been broken from a fall; saw them next day after the accident; perceived slightly more irritation in the right, but not enough to justify any other than the belief that it had received rather more of the shock. I found the pulps of both fully exposed and slightly swollen. By this time there was considerable irritation. I decided to save the roots and pivot thereon, confident that the irritation could be cut short by extirpating the pulps at once, and not waiting for the slow action of arsenic. The pulps came forth perfectly; this did resolve the inflammation, as anticipated with but little treatment. When preparing the root of the right one—after all irritation had subsided, of course—I found that there was a sensitive point about half way up the canal, seemingly opening into the base of the maxilla. I knew it was not dental pulp; supposed that in enlarging the canal, which had to be done at that point, I had penetrated to the periosteum, which occasionally occurs. Judging from precedents, I feared no ill consequences, but went on to pivot as usual with gold wire incased in osteoplasty. In a few weeks I was called upon to repivot this right central; the left was still firm, there being no uneasiness whatever; the right growing more irritable all the time. There was enlargement, similar to exostosis, but of too rapid a growth to justify that belief. No signs of abscess or the least accumulation of pus; root became looser; had to repivot several times on account of failure in osteoplasty to become hard; moisture constantly present; the root seemed not more than half the length it should have been to make the operation firm, judging from the arc of the circle when it was oscillated. After several attempts to pivot in various ways, and the symptoms growing more serious, threatening abscess and extending to the adjacent teeth, I at last concluded to open the seeming abscess and treat it,

as perhaps I could succeed in that way. All of no use; it would give the same trouble. My only remedy was removal and inserting a tooth on plate. The sequel will prove how nearly I was right in the final decision. I first extracted the left root, and found it perfectly healthy,—save sympathetic irritation. But upon the right being drawn, I found to my surprise but half the root; was inclined, at first, to attribute it to absorption; but the idea was soon exploded by close inspection. The angles were so perfect that it reminded me of a fracture. Added to this, there was a slab upon the left approximal side extending quite to the neck of the root, and, linking this with the history of the case, it led me to suppose that there was certainly *compound fracture*, and that the remainder of the fang was still in the socket. Whereupon, examination into the socket revealed a structure which, from the sound emitted from an excavator passing over the surface, I adjudged to be *dentine*—the apex of the root. This was easily taken away, on account of the front wall of the process, to nearly full length of root, being absorbed. The parts soon succumbed to the application of tinct. iodine and creasote, with soapsuds injections followed with tepid water. I kept the place open for two weeks, until the floor was once more filled, and dismissed the case with directions to keep it cleansed.

Having no precedent, and the seeming impossibility for such a fracture to have occurred, I had to grope in the dark until the circumstances were made plain by their own development.

Compound Fracture of the Inferior Maxilla from Extraction.

I first saw this case about two weeks after the tooth had been extracted.* The patient came simply to have a "tooth drawn," not being aware at the time of his true condition. Upon examination, I found the whole of the left side in a state of suppuration, from the ramus to the first bicuspid, acrid pus pouring out from the socket of the remaining second molar and bicuspid. The mouth could not be opened farther than half an inch between the teeth, being almost absolutely fixed. It was very evident that the condition of the mouth was such that the teeth, as far as the first bicuspid, should be removed. Little did I anticipate a fracture; supposed it the result of indiscretion in the operator, in extracting when the parts were too highly inflamed, which had extended to and involved the teeth above named. Fearing general necrosis, not only from local symptoms but from the low vitality of his system, one lung being quite gone, I decided to remove the teeth. It was with difficulty access could be gained, though the teeth were very loose. After giving directions to keep the parts well cleansed, I made an engagement for the second day thereafter, purposing to give

* The tooth first extracted was the dens sapientia.

a more thorough examination. Not feeling as much relief as he anticipated, and having failed to pay charges, he did not present himself again until six weeks had elapsed, when he *was forced* to show himself. By this time he was unbearable,—the senses cannot imagine a more revolting *living subject*. The stench was so great as to cause his own friends and relations to avoid him. Up to this time his family physician had not observed the cause. The poor fellow was so nearly dead therefrom that he knew not why he had come. His mouth, or rather jaws, were as close together as when I last saw him. I expected to find upon examination an alarming case of genuine necrosis from inflammation. The first glance into the mouth revealed a point of the maxilla near the cuspid. Until touched, the fracture seemed of but small extent. Upon moving the part, the whole máxilla, to the condyloid process, seemed involved.

It was plain that the soft parts had become thoroughly detached, the periosteum no longer investing the bone; and nature had gone so far as to most perfectly sequestrate the portion of the maxilla, which I had to remove in segments, there being so little space by the mouth. No hemorrhage resulted except from the sharp angles of the necrosed bone, which was soon subdued. In fact, it soon abated of itself. From the appearance of the detached portions, and examination of the mouth, I was satisfied that the cause had been removed. The low condition of the patient's system demanding generous diet, along with tonics and stimulants, these were advised. Creasote and iodine were applied as local remedies. The patient being some ten miles distant, prevented more than three applications per week. Castile soapsuds were injected, and the parts kept rigidly clean. In two weeks I dismissed him, as he did not need my attention any further. It is worthy of remark that, notwithstanding the complete loss of function of the left lung, the parts healed without a particle of trouble.

RESUSCITATION FROM ASPHYXIA FOLLOWING THE USE OF NITROUS OXIDE.

REPORTED BY CHAS. W SELLERS, OF OHIO.

Miss B., aged 21 years, made application at the Dispensary of the Philadelphia Dental College, at three P.M., November 28th, 1870, for the extraction of the right superior first molar. She desired to be placed under the influence of nitrous oxide for the operation, but was advised not to have the gas administered; she insisted upon it, as she did not wish to suffer pain. The gas was then administered, and during the extraction she cried out, and, placing her hand over the region of her heart, called for her mother; then immediately became asphyx-

iated. She was placed upon a lounge, water thrown over her face, and her garments loosened, but without any improvement of the respiratory functions. Extremities becoming cold and pulse imperceptible, Dr. Wm. Head, Demonstrator of Operative Dentistry, who was present, applied artificial respiration by means of insufflation, forcing the air into her lungs a number of times by applying his mouth to hers. This was attended by only momentary improvement, and the patient again relapsing, insufflation was repeated. The respiration now became spasmodic in its action; Dr. Head called in the assistance of Dr. J. Gibbons Hunt, and they agreed to apply the galvanic battery, which was done; but it seemed to *completely arrest* respiration, and was therefore abandoned, when insufflation was again resorted to. At this time Prof. McQuillen, who had been sent for, arrived, and suggested that friction should be applied to the extremities, and brandy as a stimulant be given; but the spasmodic character of the respiration would not admit of the use of the latter. Upon the suggestion of Dr. Hunt, hot cloths were applied to the spine, followed by marked improvement in the condition of the patient; but still respiration was mainly diaphragmatic and spasmodic in its character; ever and anon she would grasp violently at her throat. This led to a repetition of the remark which had been made, that some foreign substance had perhaps lodged in the air-passages. Supposing that the operation of tracheotomy might be required, Prof. Allen was sent for, and soon arrived; he at once applied flagellation to the chest with the end of a wet towel. Brandy and assafœtida was given this time with better success, followed by evident improvement. She now became semi-conscious, answering some few questions for the first time, and continued to improve until about 5 P.M., when a carriage was procured for her removal home, which was about two miles distant from the college. The patient was carried down-stairs to the carriage, apparently in good spirits, laughing and talking, and protesting against being carried, declaring that she was able to walk down without assistance; but subsequently stating that she had no recollection of being carried down stairs. Immediately upon being placed in the carriage she became unconscious, with symptoms of a relapse, but by the time the carriage arrived at her home she had recovered sufficiently to enable her to walk with assistance into the house. Upon being placed on the sofa, she had a complete relapse, respiration being almost entirely suspended. While in this condition, Prof. Allen again applied flagellation with wet towels to the chest, and gave an injection of turpentine, valerian, and albumen. This was followed by very marked improvement, when Profs. McQuillen and Allen left the patient under the care of Dr. M. S. Klinck and myself, students of the Philadelphia Dental College. We remained with her during the night, in which time she had frequent relapses attended with marked hyste-

roid symptoms; in the intervals she slept restlessly, yet continuing to improve.

About 11 A.M. next day, we were relieved by Messrs. Patrick, Balis, and Hathaway, also students of the college. During the day she was constantly threatened with relapse, which, however, did not take place; still continuing to improve, about 6 P.M. she was supplied with some oysters, chicken, and coffee, which she partook of ravenously. Dr. Klinck and myself having returned to relieve the above-named gentlemen, who had watched the patient during the day, we carried her up-stairs to her room; about 9 P.M. Prof. Allen prescribed spts. ætheris comp., spts. ætheris nit., and tinct. valerian, to be given every three hours; also belladonna plaster, to be applied over cardiac region, as she complained of severe cardiac pains. She slept comfortably during the night, and improvement was so marked the following day that further care and attention were deemed unnecessary by the gentlemen in attendance; from this time she recovered rapidly, and has since visited the college several times to have her teeth filled. In connection with this case, it is but just to mention that the gas was perfectly pure, as it was afterwards administered to several patients with the usual result of perfect anæsthesia. The administration was properly conducted in the presence of Dr. Klinck and other experienced persons; the untoward results in the case were due to hypertrophy of the heart inherited from the patient's mother, and aggravated by the excessive use of coffee; two weeks previous to this occurrence her mother suffered from a severe attack of heart disease, and was confined to her bed for several days.

The experience in this case, although unfortunate for the patient, was of decided value to those who had the opportunity of witnessing the phenomena attendant upon asphyxia and the treatment pursued. The prompt and efficacious manner in which Dr. Head applied insufflation cannot be too highly commended, as this evidently averted a fatal termination.

PATENT-RIGHTS.

BY S. J. M'DOUGALL, M.D., BOSTON, MASS.

Read before the Massachusetts Dental Society.

ALL that seems necessary in order to obtain letters-patent is to present to the commissioner an idea, or the embodiment of an idea, that shall, after a moderate amount of record-searching, appear to him new. And all that is necessary to sustain it is to show that it has never been made public or put into general use: rather, the opponents must show that it has been made public or become common, available property previous to or coeval with the patentee's knowledge of or experiments with the same, in order to induce the courts of law to declare it null and void.

I believe in the doctrine that "the laborer is worthy of his hire," and that no kind of labor is more entitled to its reward than the invention and introduction of a useful instrument or machine, or the conception and promulgation of an original and valuable idea. Neither has a man any better right by law, either civil or moral, to goods, chattels, bonds or mortgages, or other kinds of property, than he has to letters-patent, or their pecuniary representative, when fairly and honorably obtained, he having solved and utilized or bought the original problem. For his discovery or invention the law rewards him, and his fellow-men should honor him.

But that letters-patent should command our respect, they should carry with them at least the shadow of originality, or of having been honestly obtained, and possess some practical value. Yet it is very evident that many of those issued have not even the *shade* of such a shadow, and many more are utterly and totally worthless,—not worth the paper on which they are written. Nevertheless, they are brought to us and urged upon us as a "big thing,"—something with which we can make a fortune in ten days, more or less; so we buy, and in buying get terribly sold. Again, some old idea or method that has been used for years, though not extensively published to the world, is taken up by some enterprising dentist, claimed as original, and letters-patent secured; when we are politely informed that we must "pay up," or discontinue the use thereof.

To satisfy ourselves on this point we have only to call to mind many of the patents issued within the past few years relating to the dental profession, coupled with the action of the patentees.

The latest of the kind that has come to my notice is "Straight's Patent Flexible Edge," for increasing the atmospheric pressure on vulcanite plates. It consists in running a band of soft rubber around the edge of the hard-rubber base, and is advertised as "a valuable discovery in dental science."

The idea of a "flexible edge" is not new. Neither is the practical adaptation thereof new. The set of teeth with a flexible edge which I present for your inspection was made for and worn by a lady (a patient of mine) of this city in June, 1866. Since that time myself and others have made a goodly number of the same kind.

Not being ambitious for fame as a "contributor," nor avaricious enough to secure a patent, nor yet sufficiently impressed with the magnitude of "my discovery," it was not so extensively advertised as to come to the notice of the Commissioner of Patents. Still, to a certain extent it has been advertised.

Two years ago this fall and winter, I had the honor of delivering a course of lectures to the students in the Boston Dental College, on "Dental Art and Mechanism." I then and there made known to them this "valuable discovery," with a full description of the manner of

applying it, on at least two separate occasions. My written notes confirm my memory in regard to the matter.

The question will now arise, If these are facts, is the patent valid? That of course will be for the courts of law to decide; and no doubt the decision would turn on the question whether describing the process or method covered by the patent a year or more previous to its issue, in a public lecture, would sufficiently advertise it to make it public property?

Before buying this or any other patent-right, it would be well for dentists to satisfy themselves in regard to two things. First, is the patent or "new discovery" of any practical value? and, second, if so, has the owner any moral or *legal* right to the exclusive use or benefit thereof?

Should every member of the profession "look before they leap" into the patent-trap, that intolerable nuisance the "patent-vender" would soon find other business.

NITROUS OXIDE—HOW LONG WILL IT RETAIN ITS ANÆSTHETIC PROPERTIES?

BY EDWARD H. BOWNE, LAMBERTVILLE, N. J.

On the 1st of August, having manufactured seventy gallons of nitrous oxide, I determined to test how long it would retain its anæsthetic properties, with the following results:

On the 5th of August I administered gas to a healthy colored man for the extraction of an inferior molar. Perfect anæsthesia was produced. On the 9th of August I administered gas to a young lady for the extraction of her superior incisors. Anæsthesia was produced, and teeth extracted within two minutes. On the 18th I administered it three times,—twice to young ladies and once to an Irish laborer, and extracted their teeth without pain. I administered it again, on the 23d of August, to a young man (clerk by occupation) for the extraction of an inferior bicuspid. Insensibility was produced and tooth extracted without pain. On the 25th I administered gas to a young man, aged 24, very stout, stone-mason by trade, for the extraction of a superior molar and bicuspid. Anæsthesia was produced and teeth extracted without pain. On the 30th of August, and *thirty days after its manufacture*, a farmer in good health, weighing one hundred and seventy-five pounds, applied to me for the extraction of the roots of an inferior molar, which had been shattered a few hours before by a physician to whom he had applied for extraction. The patient was laboring under great excitement, and suffering intense pain. After considerable persuasion, I induced him to try the gas. Anæsthesia was produced in about a *minute and three-quarters*, and the roots extracted *without pain*.

In conclusion, I would add, that I use an eight-gallon bag, *and do not mix chloroform with the gas.*

REFITTING TEMPORARY PLATES OF VULCANITE.

BY A. J. REDERICK, D.D.S., SIOUX CITY, IOWA.

Patients often present themselves to have a number of badly-decayed teeth and roots extracted preparatory to the insertion of artificial substitutes; and these are wanted immediately by many. If the extracting consisted of roots wasted so much by absorption as to have but little depth of implantation in the alveoli, or if these are of their full length, but loosened and exposed by the absorption of the gum and alveolar tissues, through the effects of tartar, mercurial salivation, or other causes, we can insert substitutes immediately, or at most in a few days, which will give satisfaction and continue serviceable for some time. But if we have the reverse of these conditions—strong, firm implantation, great thickness of alveoli, coming well up to the thin edge of the decayed root and margin of the gum (one of those cases of extracting where we feel relieved when done), such teeth when replaced immediately will become loose and useless to the patient, even should several months elapse before inserting them; and these are found mainly in the mouths of young persons, the very class most impatient and desirous of immediate insertion.

If we state clearly to each patient what will be the result of immediate insertion in their own case; have them anticipate inconvenience from looseness by absorption; when this occurs, instead of pronouncing against you, they will have respect for your judgment and confidence in your skill.

Now, what shall we do with this loose temporary set? Throw it aside, take a new impression, and make a new set, or add rubber on its palatine surface? The first undoubtedly would be the best; but, as we have stated, patients will not go to the expense of getting two or three temporary sets. The adding of rubber to the palatine surface would be equivalent to a new impression, or new plate; but as plain teeth are used, a thickness of rubber corresponding to the absorption taking place would be interposed between the neck of the tooth and gums, producing an unsightly appearance. If gum teeth were used, this would be the best method of preserving the articulation and restoring the adaptation; but it would make the plate unduly thick.

The plan I have adopted is this: Use the plate as if it were an impression-cup. Note where absorption has taken place. Put a thin batter of plaster on the plate corresponding to these places; hold in the mouth firmly in place until set; varnish, oil, pour in plaster for model; separate the plate; also plaster used in the impression, which will be found to have extended but a short distance back from the alveolus of the extracted teeth. The model that we have thus obtained is a correct representation of the mouth If the plate is made to fit this, it will fit the

mouth; and this is what we propose to do. The rubber can be softened in two ways—by heating in sand, or in sweet oil. I prefer the latter, as there is no danger of burning the plate. Commence by heating the incisors, holding them within one-half or three-quarters of an inch of the plate back of them in the oil; have some pieces of cloth or buckskin gloves, to protect the hands. When the rubber is sufficiently hot, it will bend on pressure; it is then time to place the plate upon the model. Press teeth and plate well up, and hold there until the rubber gets stiff. Proceed with the bicuspids and molars of one side, then the other in the same way, care being taken that the pressure applied to bring the teeth and plate in position is in line with the axis of the teeth. This will preserve their relative position to the antagonizing teeth, and prevent loosening around the pins.

On trying the plate in the mouth, it will be found to hug up close and fit as snugly as if a new plate had been made. The antagonism will not be disturbed as much as might be expected. By laying a little rim of wax on the grinding surface of the teeth, and directing the patient to close the jaws, the places and points needing grinding will be made apparent by the wax being entirely cut through. In taking the impression with plaster, should it shell off, varnish with sandarac and stick on a little cotton, or use wax by having it very soft. It takes but a short time to refit a plate by this method, and the patient will pay liberally for the time expended compared with revulcanizing or making a new plate.

HEMORRHAGE AFTER EXTRACTION.

BY L. N. HUTCHINSON, BIG RAPIDS, MICH.

Having observed, in various communications to the Dental Cosmos, on hemorrhage following the extraction of teeth, that many of my fellow-practitioners have been baffled in their efforts to stop the flow of blood, I have thought it advisable to give an experience which I had some years ago, in a severe case, which continued to bleed nearly forty-eight hours. Having tried all the remedies I could think of—among others tannin and the subsulphate of iron—without producing the desired result, I came across just at that time a paper of sugar of lead. Knowing it to be an astringent, I mixed some of it with tannin on a pledget of cotton, which I forced into the alveolus, and then applied a compress of muslin over this, and, to my great satisfaction, completely arrested the hemorrhage. Since that time I have had quite a number of cases under treatment, and this remedy has never failed on the first application. I present this experience as some slight return for the benefit derived from the perusal of various communications in the Dental Cosmos and other dental journals.

ON SECOND DENTITION.

BY P. A. SKEEN, PITTSBURG, TEXAS.

About two years ago Dr. T., a practicing physician of this place, called on me to have a right superior lateral incisor, which was decayed, filled. I performed the operation. He called again this week, and informs me that in the latter part of last year the tooth I had filled loosened, and eventually came out, and he discovered immediately a new tooth making its way through the gum (in place of the old one), which is now a well formed and perfect tooth. The gentleman is twenty-nine years of age.

[The delay attendant upon the shedding of the deciduous incisor, mentioned by our correspondent, is by no means of common occurrence. Quite recently, however, I had occasion to fill two superior deciduous canines, in the mouth of a lady about twenty years of age; they were quite firm in their sockets, a fact made markedly evident on inserting a wedge between the right canine and bicuspid, with a view of securing space to insert the filling. In connection with this matter, it may be well to add, that the removal of such teeth, with the view of affording an opportunity for the permanent teeth to make their appearance, is open to the objection that there may be no permanent teeth in the jaw to supply their place, and the patient is thus deprived of organs which although not perfect in form in comparison with the other teeth, at least serve a useful purpose as masticatory organs.—J. H. McQ.]

IS RUBBER POISONOUS?

BY H. F. DOUGLAS, FENTON, MICH.

This question having attracted so much attention among the profession lately, I wish to report two cases in my practice:

Mrs. W. had worn a partial upper set on dark rubber, unpolished, for about five years. The mouth was very sore and red; ulcerated patches covered full half of the surface under the plate. April 22d, I inserted a plate of light rubber, thoroughly polished, next to the palate. May 10th, the mouth was much better, and there was no sign of pus; the red patches were much lighter in color. I saw the patient again July 10th. The plate was worn constantly; the mouth was entirely well.

Mr. S. was a similar case, and nearly as bad. I treated it the same way, with a like result.

Neither of these cases had any treatment except change of plates. I have seen no case of that difficulty where the plates were well polished. I do not know that the idea is new, but have seen no report of it.

NEURALGIA PROBABLY ATTENDANT UPON GALVANIC ACTION.

BY W. G. BROWN, D.D.S., ALBANY, GEORGIA.

The following case was related to me by a physician who ranks among the highest in the profession; and thinking it might be of interest, I send it to you for publication. A man called upon the doctor to have a tooth extracted, as he had pain all over the right side of his face, which he located in one of the molar teeth, that had apparently a very nice gold filling. The patient was dismissed without extracting the tooth, as the doctor thought that the pain was due to neuralgia caused by something else, and treated him accordingly. The patient called again the next day, saying the tooth must come out, as it pained intensely. It was extracted, but no relief was afforded. He called on the following day, and desired to have other teeth removed. The molar tooth that had been extracted was broken open, and found to have been half filled with tin foil and finished with gold. The other fillings were then taken out of the remaining teeth, and found to have been in the same condition, thus making a galvanic battery. The patient was sent to a good dentist to have these fillings renewed with gold. Immediate and permanent relief was thus obtained.

DENTAL ANOMALY.

BY W. P. RICE, MT. UNION, OHIO.

Mr. J. S., aged twenty, called to consult in reference to his teeth. He has but eight upper teeth; never had any extracted. The central incisors occupy the place where the laterals should be; the laterals are not erupted; the vacant space between the centrals was about the right width for the laterals. The cuspids were about the usual size of deciduous teeth. The bicuspids are not erupted. The first molars are small, and both have been filled; second molars are the usual size. The teeth of the lower jaw appear to be all right, except one central incisor, which is a deciduous tooth of the smallest size.

The articulation being very imperfect, I decided to extract all the upper teeth and replace with artificial ones.

The central incisors and second molars had unusually long roots and crowns. The cuspids were deciduous, with small, short roots; one of them much, the other slightly, absorbed. The first molars were deciduous; crowns small, roots not over two lines in length, and slightly absorbed. The patient has always been healthy, and never experienced pain in his jaws. The query is, Why the deciduous teeth have been retained so long? What is the reason the laterals and bicuspids have not erupted? Will they ever appear?

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY. J. W. WHITE.

CANADA JOURNAL OF DENTAL SCIENCE.

Dr. C. P. Lennox communicates the following "Case of Corrosive Ulcer:"

"Three weeks ago I was requested to visit a lady suffering with alveolar abscess. I found her in great pain with it; face much swollen. The flesh was sloughing off from the alveolar ridge and roof of the mouth, so as to leave bare the bone from the centre of the hard palate to the external side of the affected alveolar process; pulse one hundred and fifty; two natural teeth, extracted easily with the fingers, showed no decay of the crowns.

"About ten years ago, while in California, a partial denture on rubber-plate had been fitted to her mouth, which, in consequence of not fitting properly in the region of the natural teeth above mentioned, kept up a constant inflammation of the mucous membrane, causing the gums to recede from the necks and roots of the teeth, and finally ulceration at the roots. Three years ago she called at my office to ask some questions regarding the case, but had nothing done, promising to call again. She retired to her bed about four weeks ago with severe pain in the side of the face, intending to visit the dentist the following day, but was confined to her room until her death, which occurred in less than two weeks, subsequent mortification having taken place."

MISSOURI DENTAL JOURNAL.

Dr. Chase, writing to students on the "Removal of Salivary Calculus," gives these practical suggestions:

"Be sure that you are *ready* to perform this operation before you commence. Of course one ought to be ready before commencing any operation, but I speak in this way of this particular operation, because it is apt to be underrated not only by students, but by older practitioners.

"First, then, seat your patient properly. If the under teeth are to be cleansed first, let the seat be low; you will need to stand above and partly behind the chair on the right side much of the time.

"A clean napkin, three-fourths of a yard square, is to be pinned around her neck, to protect the dress from blood, water, etc. Another napkin is to be pinned on the back of the chair for your own hands; some small mouth napkins, two by eight inches, to use about the lips, to wipe your instruments on, etc.; a *colored* tumbler, in which constantly to rinse off the tartar and blood from the scalers used. A colored tumbler is important for the purpose of concealing the contents, which are often disgusting to the patient. A *lady* cares much for appearances. She generally considers this a disgusting operation, and will appreciate any efforts you may make to render it less so to her. You need pulverized pumice-stone and chalk, for polishing-powders, a porte polisher, and a smooth elm- or bass-wood stick, eight inches long.

"A syringe will be necessary also, to be used with a tumbler of clean warm water.

"The instruments for the removal of tartar should be small, thin-edged, and sharp. Nearly all the scalers found in shops are twice too

large and clumsy. Besides the curved-pointed and curved square-edged instruments, you will find exceedingly delicate chisels and hatchet excavators useful.

"I would commence on a posterior molar of one side of the mouth, on the lingual surface, and continue around to the corresponding molar of the other side. Before polishing this lingual surface, proceed in the same way with the buccal surfaces of these teeth. Now with the chisels and excavators remove everything on the approximal surfaces.

"The scales of tartar are easier loosened by inserting the instrument under their lower border. After cleaning all portions of the teeth *above* the gums, the necks, which are under the gums, should secure especial attention. Here, in fact, is the most important work to do; not a granule of this irritating lime deposit should be left in this location, for the smallest one will afford a point of support for a new deposit, and the operation must then be repeated in a few months. Here we find hatchet excavators useful, scraping upwards with the *long* side of the blade.

"The syringe should often be used to force away the débris left under the gums and between the teeth. The instruments should be wiped on the small napkin after each rinsing in the colored tumbler. The water in the latter should be tepid, and occasionally changed for clean water.

"After scaling is finished, the polishing-powder must be patiently used; pumice, then chalk.

"If the operation has been prolonged, and especially if it has been bloody, another appointment should be made for the following day, to see that nothing has been left undone that ought to be done.

"Some teeth appear to be perfectly free from tartar to the unprofessional; but observe that little *rose* spot on the gum, just at its edge, or below its margin. There is a granule of tartar there, and its rough surface has caused the spark of inflammation which you see in the gum. Remove it.

"The under front teeth are often very loose from the absorption of alveoli, caused by present tartar. There is sometimes *danger* in removing the calculus, unless the teeth are *fixed.* Well, then, give them support by softening gutta-percha in hot water and pressing it over the buccal surfaces of half a dozen teeth to be operated upon. After the deposit on the lingual side has been thoroughly removed, we can change the gutta-percha to that side of the teeth and cleanse the buccal surfaces.

"The patient may be benefited by using an astringent wash for a few days, in order to hasten the closure of the gums around the necks of the teeth as soon as possible. The sooner and more effectually this is done, the less likely is the tartar to commence its deposit again soon. If the gums are spongy, it will be of service to slit up every festoon with a *sharp* lancet or knife; the bleeding will be useful, and the cicatrix will assist in causing a shrinking of the part between the teeth."

British Journal of Dental Science.

Mr. Henry Moon, Assistant Dental Surgeon to the Dental Hospital of London, communicates the following case of a "Fistulous Opening connected with the buried Root of a Tooth:"

"Helena Draper, æt. 30, has for three years had a fistulous opening beneath the lower jaw, just in front of the right angle. She says that at one of our metropolitan hospitals (where she has been a patient) her case was looked upon as one of necrosis of the jaw, and that an operation for the removal of the dead bone by external incision was proposed.

"It seems that when the fistulous opening first appeared an attempt was made to extract the tooth directly above it, and that this tooth (the second molar) was broken, and part of its root allowed to remain in.

"When the patient came to the Dental Hospital a few weeks back, there was no thickening of the jaw in the neighborhood of the sinus perceptible; her right lower molars were wanting, and the alveolar processes that had supported them had been absorbed; the gum was firm and healthy, but in it—at a point vertically above the sinus—a minute depression was visible; and upon a searcher being inserted at this spot, a tooth was felt. In the extraction of the stump, which proved to be an undivided double root, with bulbous extremities, some difficulty was met with from its being imbedded deep down in dense bone. Recourse was had to dividing pliers, small holes being drilled in the bone on either side of the tooth for the insertion of the points of the instrument.

"The fistulous opening closed on the day after the extraction.

"The remarkable feature in this case is that its true nature had not been recognized by the surgeons who had previously examined it—a fact due, probably, to the sinus having been explored from below, when the point of a probe would have come in contact with the exostosed ends of the roots, which, being rough and deeply eroded, were liable to be mistaken for necrosed bone."

J. L. Ritson, L.D.S., communicates two cases of "Vomiting following the Inhalation of Nitrous Oxide Gas."

"Some few weeks ago a young lady, about seventeen years of age, presented herself to me to have an inferior molar, right side, extracted. She wished to be placed under the influence of the nitrous oxide gas for the operation. I asked her several questions to satisfy myself as to the propriety of administering the anæsthetic, and among other things wished to know how long it was since she had partaken of food. I found, about two hours previous to my seeing her (it being then about 3 P.M.), she had taken a very small quantity of food at the usual dinner hour; she was suffering so much from the diseased tooth that she had but little inclination to eat. I therefore proceeded to administer the gas, and all went on as satisfactorily as possible, the patient being perfectly anæsthetized in about fifty seconds. I removed the face-piece, and immediately after I had done so vomiting commenced freely. Being anxious to have the offending tooth out while the patient was in a state of unconsciousness of pain, I proceeded to operate, although under most disadvantageous circumstances, owing to the contents of the stomach coming up so freely. I succeeded in getting out the tooth at once, and the patient was quite unconscious of any pain during the operation. She awoke in about a minute after the tooth was removed, the vomiting going on for about another minute or two after she was restored to consciousness. Some little time was then spent by the servant who accompanied her, in cleaning the dress,

etc., which had become unavoidably soiled by the sickness, when the patient walked home apparently none the worse from what had taken place.

"On Monday last (31st October) a young lady brought her brother to have a tooth extracted, and after the operation she asked me if I remembered a young person having the gas some short time back, and being very sick from the effects thereof; I replied I did perfectly. She said that the same young lady had been very ill for three weeks after the inhalation, and that her medical attendant attributed her illness entirely to the influence of the gas. I endeavored to get some particulars as to the nature of her illness, and the symptoms connected therewith, but could learn nothing from the young lady I interrogated, as she knew nothing as to the nature of the case.

"The patient here alluded to was the daughter of a sea-captain, and had returned to England from Australia about a month previous to the operation. She was well nourished, and appeared a healthy young person. I may remark that the gas used in this case was the liquid nitrous oxide manufactured by Messrs. Coxeter & Son, Clover's face-piece and all the other necessary appliances being attached to the vessel containing the gas."

"[We publish this as a typical case, although presenting no very new aspects, and chiefly to enable us to append the following remarks upon it with which we have been favored by J T. Clover, Esq., F.R.C.S., whose experience in these matters is so well known. We have had a somewhat similar case, the sister of a medical man, who began to vomit after inhaling for about thirty seconds; but upon inquiry we learned that she habitually vomited on the occurrence of any unusual excitement or anxiety.—Ed. *B. J. D. S.*

"The report of the case is incomplete without particulars of the illness, which the medical man in attendance alone could give.

"The fact of vomiting commencing within a minute of inhaling nitrous oxide, is so contrary to experience, that it is impossible to regard the inhalation simply as the cause of the sickness.

"She had eaten a very *small* quantity of food at dinner, yet the vomiting was *very considerable*, so that it is probable that the stomach was not so empty as it ought to be when she commenced dinner, and that toothache was really only a part of the illness under which she was laboring when she went to the dentist.

"We are not informed whether she vomited blood. When blood is swallowed, it often acts like an emetic, and the loss of blood when the system is weakened by pain and loss of rest might account for an illness of three weeks.]"

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

A MEETING was held on Wednesday, November 2d, 1870, at the Philadelphia Dental College building, No. 108 N. Tenth Street.

Prof. Stellwagen read a paper on "The File;"* after which he exhibited a set of instruments, many of which had been presented to the

* See page 3.

college by a member of this society, Dr. S. S. White, and the balance had been purchased to make up a complement for the museum.

To say that these instruments were of unparalleled excellence, would not be correct, since they had been selected from the usual stock on hand at the depot, with the exception of some few modified or made expressly for the set. The professor stated that he had examined the pluggers and burnishers under the microscope, with a power of fifty diameters, and that he was astonished at the regularity of their serrations and beauty of finish. He had been so well convinced of the economy of superior instruments, that at one time he made all of his excavators; but for the past two years he had saved himself much trouble, and expense of time and labor, by purchasing from Dr. White, where he could obtain on an average a better instrument for less outlay.

To this selection he invited the attention of the members, and would be indebted for any criticism that they would offer, as he desired it to be a model one.

The upper tray contained hand and mallet pluggers, the latter being a set of ten, with tapering octagon steel handles, without file cutting; which roughening he thought objectionable, as where it touched the fingers they were made at first tender, and if constantly used, the skin thickened like corns, which he had seen in one case produce so much irritation, that the dentist could not sleep at night. These pluggers were designed for hand-pressure as well; also an eight-ounce iron-bound leaden mallet, as recommended by Dr. Corydon Palmer, for giving a pushing stroke.

The next tray contained explorers and chisels for opening cavities or separating teeth, files for finishing, a neat magnifying mouth-mirror, and a syringe made with great care from glass-pressure gauge-tubing, that had been drawn over a mandrel and carefully annealed, so as to be of uniform size and not liable to break from sudden changes of temperature.

The enamel chisels of Dr. Jack's pattern, he had with single points and heavy handles, to avoid danger from wounding the hand or breaking the point, as they would fall with the handle down; these handles afforded a very firm grasp.

The other two trays contained excavators and drills; among the latter were six three-faced and five-sided. With some modifications, they were such as had been suggested to him by Dr. C. E. Tellander, of Stockholm, Sweden. They were designed to open cavities with fissures running into them, or to drill perfectly true round holes for pivoting.

The bottom of the box had a space for napkins, pivot and polishing wood, rubber-dam cloth, forceps, etc. One of the prominent features of the case, was that each instrument was fitted into a separate carved space, which prevented it from being rolled about and thus injuring the point or the bronzing of the handle. By numbers on a slip under and corresponding to those on the instruments, they could be readily re-

placed in their proper positions, and thus save much valuable time when looking for any particular size or pattern.

The case in which they were arranged, was a plain morocco-covered box, measuring twelve inches long, nine inches wide, and five inches deep, being compact, portable, and not at all clumsy, while the price of the whole brought it within the means of students to obtain a complete outfit, which for perfection of temper and elegance of finish he thought unequaled by any other manufacturer.

BROOKLYN DENTAL SOCIETY.

THE third annual meeting of this society was held on Monday evening, October 3d, 1870.

The following were elected officers for the ensuing year:

President.—Dr. G. A. Mills.

Vice-President.—Dr. A. H. Brockway.

Recording Secretary.—Dr. E L. Childs.

Corresponding Secretary.—Dr. C. A. Marvin.

Treasurer.—Dr. I. C. Munroe.

Librarian.—Dr. John C. Wyman.

Drs. Hill and Mills made interesting addresses.

Dr. W. H. Atkinson spoke of the necessity of the profession taking hold earnestly of the general clinic, for he considered it the best mode of education for our specialty, as oral instruction could be immediately followed by demonstration. He hoped the time would soon come when a fund would be raised to establish clinics, and have good men perform operations in every locality where enough dentists could be got together to make it interesting. He believed that nothing else would do so much to develop the profession, and a few earnest men could thus accomplish much good.

Dr. Munroe presented a lad from the Dental Infirmary. The case was one of alveolar abscess of the left inferior sixth-year molar, of twelve weeks' standing. The face was very much swollen, the abscess discharging profusely. He had performed the usual operations of thoroughly opening into, cleaning, and dressing the pulp canals, and brought the lad before the society, as he thought it an interesting case for a clinic.

Dr. Atkinson was invited to take charge of the patient, and said this was a case of periostitis from exposure and death of the pulp, resulting in caries and necrosis of the outer wall of the alveolus; the *exciting cause* being death of the pulp; the *constitutional cause*, scrofulous debility. There was vitality enough to develop the temporary teeth quite well.

Necrosis means the death of tissue, soft or hard. The difference between caries and necrosis of bone is simply in extent; *caries* being superficial; *necrosis*, involving considerable territory to a greater or less depth. They both result from deprivation of pabulum to the part. *Ulceration* in the soft tissues is equivalent to *caries* in the hard. Sphacelus, or *mortification* in soft tissues, is equivalent to *necrosis* in the hard.

A certain portion of the surface is now dead over the site of the second- or twelfth-year molar, and extending by caries beneath an inflamed involucrum.

There are two ways of treating these cases: the usual one of general surgery,—that is to say, simply waiting the exfoliation of the necrosed part and surgically removing it; and the treatment that I advocate, denominated abortive treatment of caries and necrosis. This divides itself into two methods of procedure,—viz., surgical and chemical. The surgical is removing by the knife, burr, file, or rasp, all the diseased portion; the chemical is dissolving the dead portions by acids, and afterwards washing away the *débris* and treating by mild dressings.

This is not yet a sequestrum, but necrosis of the outer plate progressing inward.

First enlarge this fistula with tents of cotton wet with creasote for two or three days, and bring the patient to the Infirmary, and I will exhibit my method of treatment, which will be to cleanse out all foreign soluble matter by repeated syringing; after which dry with ropes of bibulous paper, and fill the chasm with aromatic sulphuric acid; dress outside over the fistula with a pellet of cotton wet with tannin and glycerin; give supporting treatment, and wash the mouth with a solution of soda frequently.

The following questions were asked and replied to by the doctor:

"Would not the strong solution of chloride of zinc act as well as the aromatic sulphuric acid?"

"No. I would use the chloride of zinc in the inflammatory stage before a fistula is formed, and by general tonics limit the destruction of the cells of bone."

"Would not the extraction of the tooth cure the evil?"

"No; it might perhaps extend the mischief."

"What will be the condition of the tooth when healthy action is restored?"

"There will be a reproduction of tissue, and the end of the roots, the growth of which is not yet thoroughly completed, will be enveloped, first by cartilaginous, and then by bony substance."

"Is this what you call a dead tooth?"

"Not by any means, for the tooth still retains vitality, and is nourished through the investing membrane. No dead tooth will be allowed to remain in the system."

The subject of "The Effect of Diseased Teeth and Gums upon the General Health" was now taken up.

Dr. Scott read a voluntary paper on the subject, claiming that among the numerous ills that human flesh is heir to, one of the principal is an unhealthy condition of the dental organs.

Diseased teeth and gums vitiate the secretions of the mouth. To them is intrusted the important business of comminuting the food,—the fuel of life,—which, when thoroughly mixed with the secretions of the salivary glands, is prepared for the stomach. If not sound, bright, and clean, they are unable to discharge their duties satisfactorily, and, moreover, contaminate everything with which they come in contact, the morbid particles given off vitiating those secretions which are absolutely necessary to produce and maintain a healthy tone in the system. They produce neuralgia, dyspepsia, and other derangements, and thus engender constitutional disorders, operating unfavorably on the chymefactive process.

If the teeth are unable to comminute the food thoroughly before deglutition, the various organs in its onward course are unduly taxed, and, as a natural consequence, a reaction will take place and a degree of torpor exist which will materially derange the machinery of life.

Dr. L. E. Brockway followed, indorsing the paper read, and urging that the accumulation of tartar upon the teeth, and the consequent inflammation and recession of the gums, led to many injurious effects upon the health, by the vitiation of the fluids of the mouth, and the admixture with the food of the unhealthy exudations, which, being carried into the stomach, deteriorate the usefulness of that organ, and by its disturbance exert a bad influence upon the general health.

Dr. Hill said that, in the case of children's teeth, as they often present very much decayed,—in many cases abscessed and the gums inflamed,—should we take as much pains to save the roots of the temporary teeth as we do those of adults? I think we should. I never extract a root, either for a child or an adult, when it can be avoided. Several cases come to my mind where they have been kept in a healthy condition for a number of years, and are still decidedly serviceable; one case of a lady in particular, where for eight years several roots have been doing excellent work, and are likely to continue so for some time to come. In this case two of the lower roots lie horizontally upon the gum, with healthy attachment, which is very strong. They do good service in mastication.

Dr. Atkinson. All teeth and parts of teeth should be retained more sedulously with children than adults, because if the temporary teeth are taken out, the gums harden by cicatricial tissue, which retards the advancement of the permanent teeth My method is to file the roots of the tooth down to the gum, smoothing off all ragged edges, so that

they can be kept free from the lodgment of food. Civilization has ignored teeth and brought about their diseases.

Dr. Dolbear. Do you always retain the roots of teeth instead of extracting them when you are to make cases of artificial teeth?

Dr. Atkinson. I always do. If the roots are healthy, so much the better; if not, bring them to a healthy condition. I use them as distributors of force, and for this purpose they are much better than the gums alone.

JOHN C. WYMAN, *Reporter*.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE third annual meeting of the American Academy of Dental Science was held in Mercantile Hall, Boston, September 26th, 1870, at 12 o'clock M. The President, Dr. Daniel Harwood, in the chair.

The following officers were elected for the ensuing year:

President.—Daniel Harwood, M.D.

Vice-President.—E. T. Wilson, M.D.

Corresponding and Recording Secretary.—E. N. Harris, D.D.S.

Treasurer.—E. G. Tucker, M.D.

Librarian.—John Clough, M.D.

Board of Censors.—Drs. E. G. Tucker, J. L. Williams, and W. W. Codman.

At this and the previous monthly meeting the following new members were admitted

Drs. T. B. Hitchcock, L. D. Shepard, and T. H. Chandler, Professors in the Harvard Dental College, Boston, were elected Active Fellows. Also, Drs. J. T. Codman, of Boston; J. H. Batchelder, of Salem; and S. P. Martin, of Worcester; Drs. F. N. Seabury, T. D. Thompson, M. B. Mead, of Providence, R. I.; James McManus, of Hartford, Conn., and H. M. Bowker, of Montreal, Canada, were elected Associate Fellows. Dr. Amos Westcott, of Syracuse, N.Y., was elected an Honorary Fellow.

The annual address was delivered by Joseph H. Foster, M.D., of New York, on "Professional Responsibilities."

Interesting papers were read by Dr. Joseph E. Fisk, of Salem, on "The Manufacture of Mineral Teeth;" by H. F. Bishop, D.D.S., of Worcester, on "Dental Societies;" and by John Clough, M.D., of Woburn, on "Causes of Diseased Teeth and Gums, and Preventive Measures for their Preservation."

EDWARD N. HARRIS, D.D.S., *Cor. and Rec. Secretary.*

WISCONSIN STATE DENTAL SOCIETY.

THE first semi-annual meeting of this society will be held at the Agricultural Rooms, State House, Madison, Wis., January 10th, 1871.

CLINICAL REPORTS.

CLINIC OF PROF. J. H. McQUILLEN, PHILADELPHIA DENTAL COLLEGE, NOVEMBER 22D, 1870.

Necrosis and Removal of a Portion of the Alveolar and Nasal Processes of the Superior Maxillæ.

Gentlemen: This young gentleman,—Mr. Tigima, a Japanese, æt. 18,—who was sent to me by Dr. Horace Dean, of New Brunswick, New Jersey, has kindly consented to come before you, that you may have an opportunity of studying a most interesting and instructive case of necrosis of the superior maxillæ, limited, it is to be hoped, to the alveolar process, but which may extend beyond that and involve the entire upper jaw. You will please step forward one at a time and carefully examine the condition of the mouth. Observe that the superior central and lateral incisors of each side and the left canine have been removed, and that the alveoli of these teeth is entirely denuded of the gum and periosteum, and presents a dingy-white appearance; while the gum in the immediate neighborhood is in a spongy condition, with here and there patches of ulceration, bleeding on the slightest touch, and with a constant discharge of fetid pus, exceedingly offensive to the patient and those with whom he comes in contact. The adjoining teeth on each side are badly decayed and quite loose. The alveoli in which they are implated is evidently necrosed, a portion of it being exposed by the recession of the gum, and the spongy and ulcerated condition of the rest of the gum warranting that conclusion.

With respect to the history of this case, the patient came under my care about two weeks ago (Thursday, November 10th), presenting, with some slight difference, the same appearance which he now exhibits to you. Unable himself to speak English, and the gentleman who brought him to me having no knowledge of the Japanese language, it was impossible to obtain any information which would enable me to ascertain the cause of the diseased condition. On the following Saturday, however, he came again with three Japanese friends, one of whom spoke English fluently, and through him the following facts were obtained from the patient:

Some three months before his upper teeth became very sore and quite loose, and the front ones annoyed him so much that they were extracted; this was attended by a rapid denudation of the alveoli.

In response to questions, he never had any arsenical applications made to his teeth; had no knowledge of having been subjected to a course of mercurial treatment at any time; never engaged in an establishment for the manufacture of phosphor matches; had not contracted syphilis; but some time before his teeth became sore and loose he had a severe

attack of scrofula,—a disease which he inherited from his father, whose teeth when he was about thirty years of age loosened and were extracted or fell out.

Here, gentlemen, is the explanation—for scrofula is recognized by surgeons as one of the prolific causes of necrosis, either alone or combined with the medication which patients are sometimes subjected to in the treatment of that disease. Observe on the left side of the patient's neck the enlarged lymphatic glands—unmistakable evidence of the scrofulous diathesis.

Of the treatment which he has been subjected to since coming under my care, I found on examination at the first interview that the necrosed portion of bone was firmly attached to the rest of the jaw. With the view of promoting separation of the dead from the living, daily applications have been made to the parts of tincture of iodine. To correct the fetor of the breath and improve the condition of the gums, the following wash has been used three times a day:

℞.—Cupri sulphas, ℈ij;
Tinct. myrrha, f℥ss;
Aquæ fluvialis, f℥viij.

Little improvement, however, can be expected so long as the dead bone remains, like a foreign body, a constant source of irritation to the soft parts.

To-day, as you have already seen, the dead part is somewhat loosened, and the indications are, therefore, to remove it at once. Let me impress, however, upon your minds the importance of always waiting until exfoliation takes place before you proceed to operate, and then, as we no doubt shall find in this case, the operation will prove more formidable in appearance than in reality.

Taking a pair of root-forceps, passing one beak into the alveolus of the left canine and grasping the sequestrum, with a slight application of force, I have, as you see, brought away the alveoli of the central and lateral incisors and canine of the left side, along with a portion of the nasal process of the maxilla, and now remove the alveolus of the right central incisor, which was separated from the other portion of necrosed bone by the harmonial suture. The hemorrhage is very slight. Covering over that part of the maxillæ from which the necrosed portion has been removed are healthy granulations, offering most favorable indications that the disease will probably be confined to the alveolar process. Again, although running very close to the antrum, the walls of that cavity are not as yet involved, and it is to be hoped may not become so. With regard to the other teeth and their alveoli, they will be allowed to rest as they are for the present. Of the treatment which the patient should be subject to, I am disposed to depend upon the excel-

lent and reliable water-dressing which nature so bountifully and constantly supplies from the salivary glands. Indeed, when taking into consideration the rapidity with which wounds of the oral cavity heal, and frequently of no limited extent, as when accompanying the extraction of a number of teeth, and even with artificial dentures sometimes inserted over the bleeding gums, it is a matter of surprise that the advantage and importance of water-dressing in the treatment of surgical cases was not recognized long before it was first introduced. Promising to bring the patient before you in a short time, that you may see if there is any improvement in the case, I now bid you adieu.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

Tumefactions of Lateral and Submaxillary Regions.

It accidentally happens that the four cases which you see before you present themselves to-day laboring, apparently, under like affections. Each patient has, as you perceive, great tumefaction of the lateral and submaxillary regions,—each face is greatly out of drawing; and what I would have you particularly remark, each face presents a different expression of suffering. These persons came to us, of course, for relief, so I proceed before you to obtain a proper comprehension of each case, so that with certainty and accuracy I may employ the means demanded for cure.

We acknowledge, to begin with, that these faces are swollen from a cause or causes. We infer that if we discover these causes, and can remove them, that nature will then quickly effect the cure.

Case I.—We take, first, this hearty, healthy-looking girl. Look at her face in the bright light in which I place it, and you will see that the enlargement or tumefaction is perforated by three openings, and that from these openings is a discharge of pus These openings, then, are the orifices or outlets of sinuses, and they lead, necessarily, to that something or somewhere which is the cause or seat of the disease.

From experience, I infer that this patient labors under one of three conditions,—alveolar abscess, necrosis of the jaw-bone, or caries. I think that without any examination I can certainly say that one of these troubles affects her. Alveolar abscess is, as we have studied, a formation and discharge of pus from a periosteally diseased tooth. The nerve or pulp of a tooth, from some cause or other, inflames; this inflammation extends through the foramen to the periodonteum, terminating in the suppuration of this membrane. The pus thus formed, while generally evacuated on the nearest surface, as in the ordinary

gum-boil, not unfrequently pursues tortuous routes, opening on far distant points—as, for instance, the neck, or even the chest. An alveolar, or more correctly speaking, an alveolo-dental abscess uncomplicated, is expected to be cured by the removal or other treatment of the offending tooth.

Is this case one of alveolo-dental abscess? We will open now the mouth, and if the disease is of this nature, there will be found every evidence of it in the existence of some badly-conditioned tooth, teeth, or roots. A puffy, sinus-riddled face like this, if dependent on dental abscess, will show loose teeth, or roots of teeth, in a turgid, congested gum—every phenomenon, indeed, of chronic inflammation being present.

In this mouth I see no such phenomena. The teeth are all sound, and the gums, particularly about the alveolar borders, are firm and rosy-looking. This is not, then, a case of alveolo-dental abscess.

On the conviction, therefore, that we have caries, or necrosis of the jaw, we fall back. A necrosis is a death,—the death of a part. Necrosis may be full and complete, involving a bone in mass, or it may be partial, destroying only a limited part. In the maxillary bones it is seldom that we have more than a limited necrosis. The dead portion separated under such circumstances is termed the sequestrum.

A sequestrum thrown off from the body of a bone may lodge and be retained in the soft parts, keeping up a discharge long after the original acute action, or inflammation which exfoliated it, may have passed away. These retentions of sequestra are very common in our clinical experience. If in this instance we have such a condition, the sequestrum will be readily discovered by the probe, which I shall now introduce.

I feel dead bone. A piece of dead bone feels to the probe like a piece of hard wood, or like lead, or soft gold, differing thus from the healthy bone, which is obscured by its periosteum; and differing also from the dying, sloughing bone of caries, in the absence of the pitted, soft, irregular face, which always marks this latter condition.

Doubtless, then, in the case before us we have necrosis, and without questioning the patient, I am sure it is one of long standing. Were it not so, there would not be such a total absence of acute conditions. A sequestrum has been thrown off, months ago perhaps, and has ever since remained cooped up in the soft tissues; further examination will surely reveal that the dead bone which I felt is disconnected from the jaw. Plainly enough, with this sharpened probe, I catch and can move this bone as anticipated. We are, then, assured in our diagnosis, and it remains but for us to act. What shall we do? I will show you.

[NOTE.—The patient was here etherized, and a grooved director being passed through one of the sinuses, until at length it distinguished and rested upon the bone, the sequestrum, which proved to be a portion of the

ramus, was cut down upon and removed. After the wound was syringed the edges were brought together and compressed by the ordinary adhesive strip, the patient being sent away with the assurance of a speedy cure. Inquiry elicited that the disease had existed for over two years, and had resulted from injury done the jaw in an attempt to extract a wisdom tooth.—De F. W.]

Case II.—Almost, in appearance (superficially viewed), this is the counterpart of the first. Observe, however, that upon this face there is but a single fistulous opening; and that it is a fair, well-defined round hole, and not a teat-like projection. The face, too, to the touch, differs; it is much softer, has more heat in it, is much more sensitive to impressions. Whatever the disease may prove to be, it is assuredly more recent than the first. It has not been in a condition of abscess more than three days,—of this we may be satisfied.

To obtain our diagnosis we may make some inquiries of the patient.

Query. How did this trouble begin?

Answer. My face began to swell, and my jaws grew so stiff that, as you see, I can now scarcely separate the teeth.

Query. But you had first a bad toothache?

Answer. None at all, sir. My teeth are all sound.

Query. How old are you?

Answer. Twenty.

This is all we need know of the patient to direct us in our course. We will now use the probe. No dead bone is to be felt. It is, then, neither a case of necrosis nor caries. Must it be, then, alveolar abscess? Not necessarily. It might be an abscess of one of the submaxillary ganglia; or it might be an inflammation and suppuration, the result of a closure of the Stenonian duct; or it might be a case of follicular stomatitis. She has no bad teeth, but she is twenty years of age. I think I can guess what her trouble is. At about this age the wisdom teeth are due, and it often happens, in contracted jaws, that there is no room for these teeth, and so they are jammed away far back under the angle of the lower jaw, and it is impossible for them to erupt. The worst oral inflammations I have ever seen have been induced by such unborn teeth. Let us look into this mouth. As I supposed, back of the second molar, which itself rests almost against the ascending ramus, is to be seen a single cusp, or point, of the advancing wisdom tooth; for the whole crown of this tooth to get into the dental arch looks to be an impossibility, yet, day by day, and hour by hour, it is growing, and crowding, and wedging its way forward. We need search no further for the cause of offense in this case. A very plain indication is to remove the irritation. How shall we do it? I should like the wisdom tooth out; but then to remove a wisdom tooth with but a single cusp through the process, with the jaws partially

anchylosed, and the whole side of the face exquisitely sensitive, is not so comfortable a matter,—for the patient, at least. Happily, however, we can meet the indications in an easier manner. I will extract the tooth in front of it, thus, as you see, affording plenty of room and allowing the wisdom tooth to fall forward. We can assure the patient of her recovery in a week.

Case III.—This boy, with a similarly swollen face, has had his trouble, as the mother tells me, for a period of over four months. He is very timid; we shall have to etherize him.

(The patient here etherized.)

In passing the probe into the sinus, which, with its teat-like projection, you can so plainly see upon his neck, I at once come upon dead bone, and the denuded surface seems quite extensive. I judge we have here necrosis of a rather extensive nature. I now look into the mouth. The teeth on the affected side—that is, the two deciduous molars, and the first permanent—seem really as if floating in a pulpy mass; pus is oozing from about their necks, and the general disorganization seems complete; without inquiring, we may affirm by the appearance of these teeth, which are much decayed, that in them the trouble originally commenced by pulpitis from irritation; the inflammation extending to the periodenteum, destroyed this tissue, and was in turn directed to the neighboring bone, involving an ostitis of such extent as to result in death of parts to the degree which we are shortly to observe. Finding thus the trouble, the only question which concerns us is his relief. This, as the acute state of the disease is entirely passed away, will consist in the removal of the parts made foreign, *i.e.* the dead or necrosed teeth and the bony sequestrum.

[NOTE.—Operation performed by first removing the teeth; next enlarging the cloacæ along the gums, and with bone forceps seizing and lifting away the sequestra, of which there were found three, involving nearly the full circumference of the bone.—DE F. W.]

Case IV.—Here is a poor woman whose case must elicit our heartiest sympathy. Her jaw has been broken by a brick thrown at her from a passing wagon occupied by some drunken brutes of men. The swelling is, as you perceive, somewhat alike in appearance with those just shown you; but if you observe closely you will see here all the evidences of an acute condition: the parts are not only swollen or engorged, but are red, hot, and excessively painful. There are indeed here all the phenomena of active inflammation; more than this, you will notice that her jaws are fixed and stiff, the result of the lymph exuded into surrounding parts. Associated with this fracture and injury to the cheeks is violent periostitis; attention to this last is the very first indication of the case. We must, and should, not attempt anything until this inflammation is subdued. Its cure is much more

important than any immediate attention to, or consideration of, the fracture. Indeed, uncombated, the fracture would be complicated with necrosis, and this would be, in her destitute condition, a heavily added misfortune. We must by all means try and secure resolution. To do this, I shall direct first the application of leeches,—ten Swedish or twenty American, applied about the base of the jaw. She will also have her feet placed in hot water, as hot as can be borne, this pediluvium to last at least fifteen minutes; she will have, as a point of counter-irritation, a blister made between her shoulders; she will be given, as a derivative, half an ounce of sulphate of magnesia, and when the bleeding from the leech-bites has stopped, she will have the whole side of her face painted thoroughly with tincture of iodine, and immediately the parts steeped with cold water, medicated with sugar of lead and laudanum. As her pulse is full and bounding,—a marked expression of the inflammatory pulse,—we will order her tinct. of verat. virid. five drops, *pro re nata*. If treatment thus active fails to abort the threatened suppuration, we shall then have to treat the case from an opposite standpoint.

[The patient thus prescribed for was passed for the day, to have her treatment continued at a succeeding clinic.—De F. W.]

Nævus.

Here is a case with which you will rarely meet in your clinical experience; certainly I have never seen a similar example. It presents itself in the person of a child eighteen months of age, who was brought to my office some weeks since, suffering with a huge erectile tumor, which occupied a large portion of the right cheek, while another, a half inch in diameter, was seen upon the lateral frontal region, near the border of the hair.

The one upon the cheek was formidable in appearance, and size, and while holding its method of cure under deliberation, I operated upon the smaller one by strangulation; it soon sloughed, and the base is now rapidly healing,—in fact, it pursued the ordinary simple course Most singularly, however, as this process of sloughing went on, I noticed, almost *pari passu*, a series of phenomena taking place in this nævus upon the cheek; it became at first red, then livid, advancing to dark purple, until, as the ligature above dropped off, its tegumentary covering also ulcerated, and the whole nævus became, as you now see it, a sloughing mass. In truth, by curing the little one above, we have cured this monster below, for I have no doubt that as this dead tissue separates, there will be left but a fresh granulating surface, which will speedily heal. Now you all know by this time what a nævus is. I have brought before you many cases at our clinic; I have shown you their composition—a congeries of arteries, veins, or capillaries; I have told you that

I preferred the name "erectile tumor," and I have spoken of the various means employed for its cure (*vide* Dental Cosmos, November, 1870). Knowing this, then, you will say, "How could this action have taken place? Was it an accidental coincidence?" No, I think not; neither was it, properly speaking, a spontaneous cure, for there was an evident, perceptible cause, which was the ligation of the other tumor; and yet, if you ask me how this cause produced such a result, I shall be unable to give you a positive answer.

One is in a position fed by the facial artery; the other dependent upon the anterior temporal or supraorbital and frontal branches of the ophthalmic for its supply, at least in the normal state of the blood-vessel system. I can therefore only suggest as a reason, that there may be in this individual an abnormal distribution of the arteries, and that both these tumors have been nourished by the same trunk. Granting this, then it might follow that I had cured this large tumor upon the principles of the Brasdor operation for aneurism—*i.e.* by interfering with the circulation in the terminal branches of this artery, I had developed a sufficient disturbance in the circulation of these larger vessels to set up an irritation, then an inflammation, and finally, a complete slough, producing thus a most desirable result from an unintentional and comparatively trifling cause. This may or may not be the true explanation,—certainly I can suggest none more reasonable. Paget speaks of one or two cases of this kind, and does not attempt to give any explanation as to their occurrence.

Salivary Fistula.

Here is a young woman who has been troubled with an open ulcer upon her cheek for nearly two years. Her difficulty commenced as an alveolar abscess from the second molar tooth, a disease, the varied results of which I so often bring before you at our clinic. And do you not remember last summer how I urged upon you the necessity of a thorough comprehension of the subject, since you would so often meet with its victims? (*Vide* Dental Cosmos, October, 1870.)

This abscess opened not into the mouth, but burrowed upward through the buccinator, perforated the Stenorian duct, and finally opened upon the cheek, forming a fistulous track, which communicated not only with the roots of the tooth, but also with the duct, in consequence of which we have both saliva and pus constantly exuding from this orifice. Here, then, are two indications to be fulfilled in the treatment. In the first place, the primary cause must be removed,—and this cause exists in the two remaining carious tooth-fangs, which will continue to exercise their irritating influence as foreign bodies so long as they remain in their present position; they must therefore be removed, giving

nature the power to complete the removal of the difficulty. In the second place, having removed the cause of drainage, the saliva must be turned into its normal receptacle—the mouth. This ulcer has resisted various treatments during these two years; for although its salivary nature was recognized, yet the underlying causes, these carious fangs, were not removed, and, as a natural consequence, the discharge continues, and must have outlet. As these roots are below the margin of the gum, we shall use the "elevator" for their extraction. (Tooth-roots here lifted out with the elevator.) Now we have removed the exciting cause of all this difficulty, and will next try to cure the intractable ulcer upon the cheek.

What must we do? We must make a passage by which the saliva will find a more easy outlet, thus turning it out of its usual channel and giving opportunity for repair. For the accomplishment of this purpose a strand of silk is threaded at each end to straight or curved needles as preferred, and these needles are then successively passed into the fistula and carried out through the mouth, leaving about a line of tissue between their two points of passage. Removing the needles, a loose knot is then tied, forming a short loop, or else the intervening tissue may be immediately strangulated and the loop allowed to ulcerate its way through. As this separation occurs, the saliva will take the course through this opening into the mouth, providing it has been made of sufficient size, and the external wound will usually heal of its own accord; still, it may sometimes require the stimulant of arg. nitr. I think that you will seldom be required to pare the edges of the external wound. This operation I prefer to that of Horner, where the whole tissue is cut out with a sharp saddler's punch, as you will find described in all your surgical works, since it is perfectly simple and reliable. Another mode of operating is by the use of a conical cotton tent, which is inserted into the wound after a puncture has been made entirely through into the mouth, its base being placed in that portion of the track situated nearest the inside of the cheek and the delicate apex of the pyramid at the external fistula. This, by its uneven expansion, will dilate the internal orifice, and permit the narrowing of the external, when after a few days it may be removed, and a similarly-shaped cone of folded iron wire inserted in its place; the apex of which cone should consist but of a single strand. This will induce a patulous condition of the oral passage, while the fistula will diminish in diameter to the size of the wire; after which you have but to remove the seton, and all will be healed in two days.

Some of these operations will usually be found applicable; but in cases where the fistula is the result of extensive sloughs, as from cancrum oris, autoplasty may be required.

These salivary fistulæ you will find to baffle all your attempts by

stimulants and caustics, and I would advise you to operate at once. The worse cases are those where some of the lobules of the parotid gland have been opened. And let me here caution you to be extremely careful in all your operations in the region of this gland, not to cut through that strong fascia which comes up from the neck, known as the parotid fascia, for should you wound but a single lobule, a fistula may result.

[The two needles were then carried through, bearing the thread with them; a loop was made and allowed to hang loose in the mouth. In a few days it had cut its passage; the saliva followed its track, and after a single application of arg. nitr., the girl reported in two weeks, entirely well.—De F. W.]

EDITORIAL.

THE LAW TO REGULATE THE PRACTICE OF DENTISTRY.

Some time ago an effort was made by a portion of the dental profession of Pennsylvania to secure the passage of a law to regulate the practice of dentistry in this Commonwealth. Efforts similar to this had been made with varying degrees of success in neighboring States. The attempt on our part, however, was not successful. A bill was prepared and presented by a committee of the State Dental Society to the Legislature, but it did not meet with any favor in that body. We do not remember the exact provisions embodied in the bill, but there was a certain feature absent from it which, if it had been included, no legislator, no member of the community, and no dental practitioner having at heart the interest of his profession, could have objected to—*i.e.* that no one shall *enter* upon the practice of dentistry after a given period who has not attended upon two full courses of lectures, and graduated from some respectable dental or medical college. A clause such as this makes provision for the future, by guaranteeing, to a certain extent at least, the proper preparation of a class of educated men, in place of the additions which still continue to be made, year after year, of young men who, after remaining with a preceptor for a few weeks, or months at the best, enter upon practice, with no preparation whatever for the responsibilities which they thus assume. The dental colleges chartered by the State, without any endowment or aid from the public treasury, have the right to expect this much in support of their interest and the interest of the profession. The period has passed when it was necessary to dwell upon the importance and necessity of a collegiate education to a dental practitioner, as this is a fact generally conceded by the educated portion of the profession, and it is to be hoped that they will favor the

embodiment of such a clause as the one named, in any bill that may be presented in the future to the Legislature; for such a provision is not only absolutely demanded in any law that may be passed, but calculated to give additional strength to the effort that may be made to secure its passage. There are certainly many members of the profession who, recognizing the necessity of such provision, would aid in this effort. The time is near at hand for the assembling of our State Legislature, and those who desire to secure the passage of a law to regulate the practice of dentistry should move promptly in this matter, that something may be accomplished this session. J. H. McQ.

MICROSCOPICAL EXAMINATION OF BONE AND DENTINE.

Such marked differences of opinion have been presented from time to time by microscopists with regard to the appearances presented by bone and dentine, that it becomes a matter of some interest to ascertain whether there was not a dissimilarity in the conditions of the specimens under examination.

Purkenjie, who is entitled to the credit of having been the first to observe the microscopical characteristics of bone, described it as having an immense number of corpuscles or solid bodies, with dark lines passing from them, and these were named after him as their discoverer, "the corpuscles of Purkenjie." Careful examination by subsequent observers demonstrated, however, that these apparent bodies were in reality vacant spaces or lacunæ, and that the lines leading from them were canaliculi or canals passing from one lacuna to another, and that the appearance of solidity presented by them under the microscope was due to the refraction of the rays of light. As a consequence of this, it was inferred, and has been generally taught up to within a few years by anatomists and physiologists, that the lacunæ and canaliculi in the living bone are occupied by the liquor sanguinis, which circulates in them for the purpose of nourishing the ultimate structure of bone. Recent investigation, however, on the part of Lionel S. Beale, has demonstrated the presence of a soft-solid substance in the lacunæ of *fresh bone.* This substance he denominates germinal matter, out of which the formed material or bone is made. The presence of this substance he has made the more clearly evident by staining the section with carmine, the coloring substance being absorbed and retained by the germinal matter. In connection with this, he has advanced the opinion that there is no circulation of nutrient fluid in the ultimate structure of the bone, and that hard substances, such as bone, dentine, enamel, etc., when once formed, never undergo change. His observations relative to the presence of a soft structure in the lacunæ and canaliculi

are undeniable, but his conclusions relative to the unchangeable character of hard tissue are not only open to question, but can be readily demonstrated to have no foundation in fact.

In 1678, Leeuwenhoek, describing the appearance of dentine under the microscope, said that he observed a large number of small tubes passing from the pulp cavity outward. The opinion thus advanced at this early date has been generally reiterated by subsequent observers, among whom may be mentioned Retzius, Owen, Tomes, etc. Mr. Nasmyth, however, years ago took exceptions to this view, denying the tubular character of dentine, and stating that it was composed of bacated fibres, with a soft-solid substance between them. His opinion was supported by microscopical sections which he had made, and from which the lime salts had been removed by the action of acids. A few years ago Mr. Tomes, in the course of his investigations, observed, on making a section of a fresh tooth, or one just extracted, that there were a number of little soft fibres or fibrillæ projecting from the dentinal tubuli. The origin and function of these fibrillæ have been somewhat questioned, but no one has denied their existence.

Of late we have been informed that the tubular construction of the dentine is an entirely gratuitous opinion, and that under no circumstance does it bear that character. The solution of this question can be readily found in the different conditions of the structure under examination,—a section from a recently extracted tooth evidently consists of the hard dentine and a soft-solid substance; while in a section from a tooth which has been removed from the mouth a considerable length of time, this soft-solid substance drying up, would leave the spaces occupied by it hollow or tubular. The appearances presented under these varying conditions would of course be quite different. On a former occasion I have directed attention to the different appearance presented by the interglobular spaces in sections of dentine according as they have been taken from a fresh or a dry tooth. The lacunæ and canaliculi in a section from a fresh bone, and one from a dried bone are not more markedly different.

The zealous and frequently personal manner in which scientific questions such as these are sometimes discussed by parties entertaining opposite views, due to their looking at them from different standpoints, reminds one of two knights meeting at cross-roads where a shield was exposed to view, which one knight declared to be gold and the other silver, and determined to settle their dispute by a passage at arms; it resulted in each being dismounted in opposite positions from that which they had formerly occupied. When lo! that which had appeared as silver to one was now gold; and that which was gold to the other had become silver The lesson which this teaches is, to examine a subject on *all* sides, and to be always open to conviction. J. H. McQ.

PUBLISHER'S NOTICE.

THE NEW VOLUME.

This issue commences the XIIIth volume of the Dental Cosmos. We have sent bills to those whose subscriptions expired with the last number, and request such as contemplate renewing, or those who intend becoming subscribers, to send in their orders promptly, so that we may determine the number of copies to print, and that those who desire may be certain of securing complete files of the journal.

Succeeding numbers will be published on the first of each month during the year. Earnest efforts will be made to increase its usefulness, and to make it a practical exponent of the science and art of dentistry. We most earnestly solicit a continuance of the favors of the friends of dental progress, by subscription and by contributions to its pages, and also ask their aid to extend its circulation in the interest of the profession and of science,—that, by the combined efforts of publisher, editors, patrons, and contributors, we may enhance its usefulness and make it indispensable to every practitioner. We also urge upon every one who has not heretofore been a subscriber to try it for a single year, and see if it does not many times repay its cost. In a word, pledging ourselves to renewed exertions, we invite the co-operation and support of all who desire the elevation of the profession. We shall, as hitherto, adhere to the system of cash payments in advance, experience having shown that in no other way can heavy loss to the publisher be avoided; and moreover, it is appreciated and prized most when promptly paid for.

Samuel S. White

OBITUARY.

It is with deep regret that we announce the sudden death of the wife of our highly esteemed and respected friend, Dr. James McManus, of Hartford. Retiring to rest apparently in the enjoyment of health, she was aroused about two o'clock by what she supposed to be cries in an adjoining room; springing suddenly from the bed, she proceeded but a few steps, and then returned to the bed, and said to her husband that she found it difficult to breathe. A physician was immediately summoned, and every effort made to relieve her without avail, as in less than an hour she ceased to live. Her death was attributed to sudden congestion of the lungs, which brought on apoplexy. She was expecting daily to be confined.

Mrs. McManus was about thirty-one years of age, a most lovely and refined woman, an affectionate and devoted wife and mother, and her death falls like a pall upon the household of which she was a bright and cheerful centre.

In his deep bereavement, Dr. McManus will have the heartful sympathies of a large circle of professional friends; of these none more fully realize the great loss he has sustained, or extend a warmer hand of sympathy, than the writer of this.

J. H. McQ.

BIBLIOGRAPHICAL.

Sun Pictures of the Rocky Mountain Scenery, with a Description of the Geographical and Geological Features, and some Account of the Resources of the Great West. Containing Thirty Photographic Views along the Line of the Great Pacific Railroad, from Omaha to Sacramento. By F. V. Hayden, M.D., U. S. Geologist, Professor of Mineralogy and Geology in the University of Pennsylvania. New York: Julies Bien, 1870.

This is a work of great value, embracing most excellent photographic views on the line of the Pacific—which, as works of art, are of a superior order—and also an accompanying text, containing a description of the geographical and geological features of the country, and an account of the resources of the Great West, by Prof. Hayden, whose name is indelibly associated with the geology of that region as a most indefatigable explorer, and whose labors have contributed largely to our knowledge of the geology and palæontology of that section. The work is gotten up in magnificent style, and particularly at this season of the

year would prove a very valuable and acceptable addition to the family circle. Knowing the interest many of the profession take in such subjects, it is to be hoped there will be a decided demand for it. The binding, typography, etc. are executed in the most perfect and finished manner. J. H. McQ.

ON DEFORMITIES OF THE MOUTH, CONGENITAL AND ACQUIRED, with their Mechanical Treatment. By JAMES OAKLEY COLES. Second Edition, revised and enlarged. Philadelphia: Lindsay & Blakiston, 1870.

We take great pleasure in welcoming the second edition of this interesting and valuable work, the first edition of which was favorably noticed in a previous volume of the DENTAL COSMOS, therefore obviating the necessity of any extended description of the contents now. The announcement of the appearance of this edition, judging from numerous letters received from correspondents in all parts of the United States, desiring to know where the work could be procured, will be attended by a decided demand for it. It is in every way a desirable work for those interested in remedying congenital malformations of the mouth. The illustrations accompanying the text have been largely increased in this edition; many of them are colored, and all are well executed. J. H. McQ.

ALLPORT'S REGISTERING DENTAL LEDGER. NEW EDITION. Philadelphia: Samuel S. White, 1871.

This is intended to facilitate the registering of dental operations, and is admirably adapted for the purpose, enabling the operator to record, not only name, date, reference, charge, and credit, but the character and locality of the various operations performed. J. H. McQ.

DENTISTS' POCKET DIARY AND APPOINTMENT BOOK. Philadelphia: Samuel S. White, 1871.

This is a convenient office or pocket companion for registering appointments for dental operations, ruled to allow for ten appointments for each day in the year, and being without date, is good for any time.

J. H. McQ.

DICKINSON'S DENTAL PLATE REGISTER AND LEDGER. By W. P. DICKINSON, Dubuque, Iowa.

As the name indicates, this is intended as a record of mechanical work, presenting in a limited space a concise history of every artificial case inserted, with a debit and credit account. The work seems well adapted to meet all the requirements of a mechanical dentist in this respect. J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Dissipation of Energy.* By Stewart, in *Nature.*—At this point we can imagine some champion of perpetual motion coming forward and proposing conditions of truce. 'I acknowledge,' he will say, 'that perpetual motion, as you have defined it, is quite impossible, for no machine can *create* energy, but yet I do not see from your own standpoint that a machine might not be constructed that would produce work forever. You tell me, and I believe you, that heat is a species of molecular motion, and hence that the walls of the room in which we now sit are full of a kind of invisible energy, all the particles being in rapid motion.' Now, may we not suppose a machine to exist which converts the molecular motion into ordinary work, drawing, first of all, the heat from the walls, then from the adjacent air; cooling down, in fact, the surrounding universe, and transforming the energy of heat so abstracted into good substantial work? There is no doubt work can be converted into heat,—as, for instance, by the blow of a hammer on an anvil,—why, therefore, cannot this heat be converted back again into work?

"We reply by quoting the laws discovered by Carnot, Clausius, Thomson, and Rankine, who have all, from different points of view, been led to the same conclusion, which, alas! is fatal to all hopes of perpetual motion. We may, they tell us, with the greatest ease convert mechanical work into heat, but we cannot by any means convert all the energy of heat back again into mechanical work. In the steam-engine we do what can be done in this way; but it is a very small proportion of the whole energy of heat that is there converted into work, for a large portion is dissipated, and will continue to be dissipated, however perfect our engine may become. Let the greatest care be taken in the construction and working of a steam-engine, yet shall we not succeed in converting one-fourth of the whole energy of the heat of the coals into mechanical effect.

"In fact, the process by which work can be converted into heat is not a completely reversible process, and Sir W. Thomson has worked out the consequences of this fact in his beautiful theory of the dissipation of energy.

"As far as human convenience is concerned, the different kinds of energy do not stand on the same footing, for we can make great use of a head of water, or of the wind, or of mechanical motion of any kind, but we can make no use whatever of the energy represented by equally diffused heat. If one body is hotter than another, as the boiler of a steam-engine is hotter than its condenser, then we can make use of this difference of temperature to convert some of the heat into work; but if two substances are equally hot, even although their particles contain an enormous amount of molecular energy, they will not yield us a single foot-pound of work.

"Energy is thus of different *qualities*, mechanical energy being the best, and universal heat the worst; in fact, this latter description of energy may be likened to the dreary waste-heap of the universe, in

which the effete forms of energy are suffered to accumulate, and, alas! this desolate waste-heap is always continuing to increase. But before attempting to discuss the probable effect of this process of deterioration upon the present system of things, let us look around us and endeavor to estimate the various sources of energy that have been placed at our disposal.

"To begin with our own frames, we all of us possess a certain amount of energy in our systems, a certain capacity for doing work. By an effort of his muscles the blacksmith imparts a formidable velocity to the massive hammer which he wields: now, what is consumed in order to produce this? We reply, the tissues of his body are consumed If he continues working for a long time he will wear out these tissues, and nature will call for food and rest: for the former in order to procure the materials out of which new and energetic tissues may be constructed; for the latter in order to furnish time and leisure for repairing the waste. Ultimately, therefore, the energy of the man is derived from the food which he eats, and if he works much, that is to say, spends a great deal of energy, he will require to eat more than if he hardly works at all. Hence it is well understood that the diet of a man sentenced to imprisonment with hard labor must be more generous than that of one who is merely imprisoned, and that the allowance of food to a soldier in time of war must be greater than in time of peace.

"In fact, food is to the animal what fuel is to the engine, only an animal is a much more economical producer of work than an engine. Rumford justly observed that we shall get more work out of a ton of hay if we give it as food to a horse than if we burn it as fuel in an engine. It is in truth the combustion of our food that furnishes our frames with energy, and there is no food capable of nourishing our bodies, which, if well dried, is not also capable of being burned in the fire. Having thus traced the energy of our frames to the food which we eat, we next ask whence does this food derive its energy. If we are vegetarians, we need not trouble ourselves to go further back, but if we have eaten animal food, and have transferred part of the energy of an ox or of a sheep into our own systems, we ask whence has the ox or the sheep derived its energy, and answer undoubtedly, from the food which it consumes, this food being a vegetable. Ultimately, then, we are led to look to the vegetable kingdom as the source of that great energy which our frames possess in common with those of the inferior animals, and we have now only to go back one more step and ask whence vegetables derive the energy which they possess.

"In answering this question let us endeavor to ascertain what really takes place in the leaves of vegetables. A leaf is, in fact, a laboratory in which the active agent is the sun's rays. A certain species of the solar ray enters this laboratory and immediately commences to decompose carbonic acid into its constituents, oxygen and carbon; allowing the oxygen to escape into the air, while the carbon is, in some shape, worked up and assimilated. First of all, then, in this wondrous laboratory of Nature, we have a quantity of carbonic acid drawn in from the air; this is the raw material. Next, we have the source of energy, the active agent; this is light. Thirdly, we have the useful product; that is, the assimilated carbon. Fourthly, we have the product dismissed into the air, and that is oxygen.

"We thus perceive that the action which takes place in a leaf is the very reverse of that which takes place in an ordinary fire. In a fire we burn carbon, and make it unite with oxygen in order to form carbonic acid, and in so doing we change the energy of position derived from the separation of two substances having so great an attraction for each other, as oxygen and carbon, into the energy of heat. In a leaf, on the other hand, these two strongly attractive substances are forced asunder, the powerful agent which accomplishes this being the sun's rays, so that it is the energy of these rays which is transformed into the potential energy, or energy of position, represented by the chemical separation of this oxygen and carbon. The carbon, or rather the woody fibre into which the carbon enters, is thus a source of potential energy, and when made to combine again with oxygen, either by direct combustion or otherwise, it will in the process give out a deal of energy. When we burn wood in our fires we convert this energy into heat, and when we eat vegetables we assimilate this energy into our systems, where it ultimately produces both heat and work. We are thus enabled to trace the energy of the sun's rays through every step of this most wonderful process, first of all building up vegetable food, in the next place feeding the ox or sheep, and lastly through the shape of the very prosaic but essential joint of beef or mutton entering into and sustaining these frames of ours.

"We are not, however, quite done with vegetable fibre, for that part of it which does not enter into our frames may, notwithstanding, serve as fuel for our engines, and by this means be converted into useful work. And has not Nature, as if anticipating the wants of our age, provided an almost limitless store of such fuel in the vast deposits of coal, by means of which so large a portion of the useful work of the world is done? In geological ages this coal was the fibre of a species of plant, and it has been stored up as if for the benefit of generations like the present.

"But there are other products of the sun's rays besides food and fuel. The miller who makes use of water-power or of wind-power to grind his corn, the navigator who spreads his sail to catch the breeze, are indebted to our luminary equally with the man who eats meat or who drives an engine. For it is owing to the sun's rays that water is carried up into the atmosphere to be again precipitated so as to form what is called a head of water, and it is also owing to the sun's heat that winds agitate the air. With the trivial exception of tidal energy, all the work done in the world is due to the sun, so that we must look to our luminary as the great source of all our energy.

"Intimately linked as we are to the sun, it is natural to ask the question, Will the sun last forever, or will he also die out? There is no apparent reason why the sun should form an exception to the fate of all fires, the only difference being one of size and time. It is larger and hotter, and will last longer, than the lamp of an hour, but it is nevertheless a lamp. The principle of degradation would appear to hold throughout, and if we regard not mere matter but useful energy, we are driven to contemplate the death of the universe."—(*Scientific American.*)

Physiological Researches on the Direct Action of Carbonic Acid.—At the late meeting of the British Association for Advancement of Science (*Med. Times and Gaz.*), "Dr. B. W. Richardson explained that

the observations he had made were new, in that they related to the direct action of carbonic acid on animal and vegetable fluids, and they were interesting equally to the zoologist and botanist as to the anatomist. He first demonstrated, from a specimen, the result of subjecting a vegetable alkaline infusion to the action of carbonic acid under pressure. The result was a thick fluid substance, which resembled the fluid which exudes as a gum from some trees. When this fluid was gently dried it became a semi-solid substance, which yielded elastic fibres, and somewhat resembled caoutchouc. This observation had led the author to study the effect of carbonic acid on albumen, serum of blood, blood itself, bronchial secretion, and other organic fluids. When the serum of blood was treated with carbonic acid under pressure and gentle warmth, 96° F., the colloidal part was separated; but when the blood, with the fibrine removed from it, was treated, there was no direct separation, the blood corpuscles seeming for a time to engage the gas by condensation of it. But blood containing fibrine, and held fluid by tribasic phosphate of soda, was at once coagulated by the acid. The bronchial secretion is thickened by carbonic acid, and a tenacious fluid is obtained, resembling the secretion which occurs in asthma and bronchitis, while secretions on serous surfaces are thickened and rendered adhesive. After detail of many other facts, Dr. Richardson concluded by showing what bearing this subject had of a practical kind. In the first place, the research had relation to the question of elasticity of organic substances; and secondly, to the direct action of carbonic acid on the production of vegetable juices But the greatest interest concentrated on the relation of the research to some of the diseases of the animal body. Thus, in instances where the temperature of the body is raised and the production of carbonic acid is excessive, the blood on the right side of the heart has its fibrine often precipitated; and in many other cases fibrinous or albuminous exuded fluids are solidified in the presence of the acid, as is the case in croup. The author in the course of his paper, explained also how rapidly blood charged with carbonic acid absorbed oxygen when exposed to that gas, and he held that carbonic acid in the venous blood was as essential to the process of respiration as was the oxygen in the pulmonary organs."

Putrefaction, Fermentation, and Infection.—In a paper recently read before the Medical Society of London, Dr. Sansom maintained (*Lancet*): "1. That putrefaction and fermentation are each due to the influence of living, growing, and multiplying material. (*a*) Fermentation is the result of the vital acts of particles of vegetable protoplasm in an organic fluid of uniform composition, the particles assuming distinct morphological forms according to the nature of the fluid. (*b*) Putrefaction is due to like influences exerted upon organic matter of a more complex or a mixed kind. 2. The atmosphere contains minute spores, ova, and particles of protoplasm, which it wafts from place to place. These are, for the most part, perfectly harmless. 3. The diseases of infection are due to minute particles of living protoplasm, which are transmitted by physical intermedia, are capable of reproduction within the recipient organism, and are excreted in vastly increased numbers. 4. Infecting molecules present the complex reactions of living beings, and though they resist certain physical influences they

are destructible by others. Slight chemical or physical disturbances may destroy them. 5. Fermentation and infection are alike due to living molecules; but though it is possible that in some cases (cholera, typhoid), the molecules of fermentation in complex conditions can induce infection, it is far from proved that all the diseases of infection are due to the organisms of fermentation.

"Dr. Richardson complimented Dr. Sansom on making as good a defense as was possible of his various points. The germ theorists were reducing the germ further and further as their microscopes improved, and what they would eventually descend to as a real germ no one could yet say."

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Zymotic Pathology. Dr. Lionel Beale states (*Med. Times and Gaz.*) "that neither the bacteria germs nor bacteria themselves can be found in many fluids possessing virulent contagious properties, while both are common enough in fluids and secretions which are known to be harmless. At every period of life, from birth to death, millions of bacteria can be found in the secretions of the mouth and elsewhere in the living healthy organism. It is, therefore, very improbable that such organisms should constitute the active material of vaccine lymph or the poison of contagious diseases."

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"*Germs.*—One is getting tired of the endless discussion to which *germs* have given rise; yet the paper by Dr. Richardson, an account of which was partly given in our columns last week, and continued to-day, may very conveniently be taken as a standpoint whence we may view the two theories of diseases, the chemical or physical and the vital.

"On the one side we have the doctrine that disease originates from germs, the type of which we may take to be the sporules of fungi, such as are described by Pasteur in his researches on the Pebrine disease of silkworms; that those bodies, introduced by some means or other into the system, begin to grow, their growth and multiplication—at the expense, say, of the blood—implying, of course, certain changes in that tissue, producing as their indications the symptoms of the disease. On this theory, it is plain that it is the vitality of the germs merely—their powers of growth and reproduction only—which are at the root of the mischief. Did they not grow, the blood and tissue changes would not be affected. On the other hand, we have the doctrine that altered secretions have the power of giving rise to diseases—say the altered secretion of skin the power of producing scarlatina, or that of the alimentary canal giving rise to cholera. Here there is nothing foreign introduced into the body, certainly nothing owing its influence to vitality merely.

The upholders of the germ theory claim for these germs extraordinary powers of resisting destruction by cold or by heat; but that the presence of certain substances, notably phenic acid, is fatal to their existence. Furthermore, they are driven to the phenomena of fermentation and putrefaction for illustrations of this theory of disease, some of them not scrupling to call ordinary suppuration the putrefaction of a wound. Now, it may be well to inquire how far we can go in actual knowledge, without the aid of speculation, as to the fashion in which certain dis-

eases originate. It is perhaps best to take vaccinia, that subject having been best worked out. From the researches of Chauveau, confirmed by those of Dr. Burdon Sanderson, we know that the venom, so to speak, is not fluid, but solid ; not dissolved in the fluid, but suspended in it. This is shown by the fact that vaccine lymph diluted by water or serum does not become less active, but only less certain ; where it does take, the symptoms are as severe as usual. In vaccine lymph there are two kinds of solid bodies: leucocytes—*i.e.* bodies corresponding to the white blood corpuscles—and others infinitely smaller and less distinct. The poison is, further, not of a crystalline character, but colloidal, for it will not diffuse; probably, therefore, it is of an albuminoid character. Now, the question comes to be, to what do these exceedingly minute solid particles of colloidal matter owe their power? Is it to their power of growth and reproduction—that is, life-force—merely, or to some other kind of influence? We know that a yeast plant or a vinegar plant introduced into a saccharine fluid grows at its expense until the sugar is exhausted, alcohol and vinegar being the accidents, the result more yeast and more vinegar plant. In disease, certain unknown germs (one is tempted to ask, germs of what—what do they come to?) are supposed to be introduced into the system, to multiply amazingly, and yet to remain unseen—to be but germs. There seems to be no life-history appertaining to them—nothing, in short, save their disease-producing powers.

"But there is another form of the theory which one can understand. Let, during an attack of scarlatina, an exceedingly small portion of protoplasm be detached from the throat of the patient while the physician is examining it, conveyed by the agency of the breath to the physician's own throat, there taking root, as we see a portion of transplanted cuticle do, affecting the neighboring parts with its malign influence—as muscle forms muscle and bone forms bone—scarlatina follows in its train. But this is something different from an accidental result of mere vitality; something other than the alcohol which accompanies the growth of the yeast plant. When one is bitten by a mad dog, and hydrophobia ensues, we can understand that it results from some poisonous material introduced by the bite of the animal, yet we are not aware that there is any apparent difference in his saliva. The disease apparently originates spontaneously in the dog. Has it ever done so in man? Dogs can communicate the disease one to another, and also to man, but man cannot to any other animal. Were there certain germs appertaining to the disease, and alone capable of producing it, these facts would be difficult of explanation; all, however, may be accounted for by the supposition that the more minute salivary corpuscles have undergone some important change, producing the disease in the animal itself and in others into whose body they are introduced.

"It is quite clear that the germ theory as ordinarily understood allows neither of the introduction of new diseases nor the extinction of old ones ; yet both are matters of history. It is tolerably certain that typhus may arise from the hardships of war, from filth and overcrowding ; yet these are not germs. Typhoid fever is generally—we do not say invariably—associated with bad drainage and impure water supply, but it is not at all clear that typhoid stools are necessary to render the water poisonous. In short, using the word germ in the sense we have done, as meaning something as definite as a bit of transplanted cuticle,

we can understand a germ theory of disease; but the germs that are untangible, continually receding as they are approached, about which we know nothing, had better, we think, remain unknown."—(*Medical Times and Gazette.*)

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Micro-telescope, the Simplest Form of.—"At a field meeting of the Albany Institute, held in Hoosic Falls, on the 24th of September, Dr. R. H. Ward, of Troy, N. Y., exhibited a simpler form of micro-telescope than has hitherto been proposed. He screws an ordinary 4-inch objective ($\frac{5}{8}$ inch wide, $2\frac{3}{4}$ inches solar focus) into an adapter (about 2 inches long) below the stage of the 'seaside,' 'clinical,' or any other hand-microscope. To this object-glass the compound body, with all its lenses, acts as an erecting eye-piece, as in Tolles' telescope and Curtis' micro-telescope. Of course no one would expect from a $\frac{5}{8}$-inch opening the light of a 1-inch opening; but the new arrangement gives a really useful field-telescope without requiring a single addition to the microscopist's apparatus. Solid (single combination) objectives act best as erectors in this case, but the ordinary objectives, from 2 inches to $\frac{1}{2}$ inch, answer very well. The same arrangement, by raising the tube considerably, and perhaps substituting a 1-inch objective for the 4-inch, furnishes an erecting compound microscope which is excellent as a hand-magnifier for field use; and by removing the lens below the stage we have the ordinary field-microscope, on which the object may be placed in the 'clinical compressor,' or otherwise."—(*Amer. Naturalist.*)

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"*Faradisation in Chloroform-Asphyxia.*—At a late meeting of the Manchester Medical Society, Dr. Hardie recounted two cases of chloroform-asphyxia in which, after the failure of ordinary means of resuscitation, such as cold affusion, artificial respiration, galvanism of the chest, etc., recovery was effected by Ziemmsen's method of pressing both poles of the battery deeply in at the root of the neck, one over each phrenic nerve. This caused a gasping inspiratory movement, when the battery was temporarily removed and the chest-walls compressed; and so on, alternately, until restoration was complete."—(*Med. Gazette.*)

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Chloral, Dangers of.—" Dr. R. C. Shettle, Physician to the Royal Berkshire Hospital, in the course of an address before the Pathological Society of Reading, after referring to Dr. Richardson's statement that under the influence of chloral formiate of soda is formed, and the coagulating power of the blood is much diminished, adds that 'it is very evident that not only is passive hemorrhage from an open vessel favored by the administration of chloral, but from the tendency which exists from the continous administration of the drug to produce decomposition of the blood, a small loss of blood would be very possibly followed by serious symptoms. Moreover, it can scarcely be a question that the tolerance of the drug is much greater in some individuals than in others; and possibly the same person at different times might bear its administration very differently.' If these views be correct, much caution would seem to be called for in using chloral in midwifery cases."—(*Med. Gaz.*)

Oil of Peppermint as a Local Anæsthetic. Alfred Wright, L.R.C.P., Edin.—"A few years ago, when in China, I became acquainted with the fact of the natives, when suffering with facial neuralgia, using oil of peppermint, which they lightly apply to the seat of pain with a camel-hair pencil. Since then, in my own practice, I in the same way frequently employ oil of peppermint as a local anæsthetic, not only in neuralgia, but also in gout, with remarkably good results; indeed, the relief from pain I have found to be almost instantaneous."—(*Lancet.*)

"*Congelation as an Anæsthetic.* By J. W. Agnew, M.D., M.R.C.S., Eng.—Some years ago I had a patient, a man of middle age, on whom it was necessary to practice amputation of the forearm. The condition of his heart was such as to contraindicate the use of chloroform. His physical system was so far reduced that he could scarce totter about his room, and the nervous system was so shattered by long-continued suffering that the idea of the knife was unendurable. Under these circumstances I was puzzled how to carry out the operation, for which he was anxious, without pain or shock to my patient. At last, recollecting having read some striking remarks by Dr. James Arnott on the congelation of living tissues by means of ice and salt as an anæsthetic, I at once saw this was the only possible procedure suitable to the case, and determined to adopt it, although it had never been applied, as far as I was aware, to an operation of such magnitude.

"Mixing, therefore, two parts of pounded ice with one of coarse salt, I placed them in a loose gauze bag, which was then wrapped round the limb at the point for operation. In seven minutes (less, I think, by a few seconds) the skin was perfectly frozen, presenting the dead-white aspect characteristic of that condition. I then proceeded to operate. On grasping the arm, I found the surface, of course, intensely cold; but, as I was not prepared for it, I was somewhat startled on finding the skin, usually so soft and movable, transformed into a rigid and impenetrable tube of frozen tissue. I was forced to wait a little till this condition of the surface began to yield to the influence of the heat remaining at greater depths, when I introduced the knife, and proceeded with the amputation, with so very little pain to the patient, and such relief to his mind, that he began to converse on some topic of the day before I had finished.

"The system received no shock whatever, the wound healed without an untoward symptom, and the general health improved rapidly afterward. On the anterior flap slight superficial vesication, about the size of a crown-piece, took place—the result, no doubt, of over-freezing. This is a point on which further experiments are required, as a knowledge of the time necessary for destroying sensibility without over-freezing is a desideratum. I had intended to institute experiments to determine this question, but circumstances have prevented me, and I now give my experience on the subject, in the hope that some one will take it up where facilities may exist for carrying out proper investigations. I think the period required for the production of cutaneous insensibility will be found to be about five minutes; but great interest would also attach to the investigation of the further physiological effects of congeation in modifying disease, or in relieving pain, whether structural mischief or disorder of function alone was present.

"For the operation which is the subject of this communication, the ether spray, even had it been discovered, would not have answered, as I could not have applied it all round the limb. But, even as it is, I think it far from improbable that the freezing mixture would be a frequently much less painful application than the ether. It is also much more convenient and manageable, and can be applied with greater topical precision. It has not to depend upon a carefully-adjusted apparatus being properly worked, or upon the purity of a delicate chemical compound, but will always do·its allotted task quickly and without fail. With the spray, although that portion of the skin where evaporation is most rapid is quickly reduced to a state of insensibility, the neighboring surface, which in all cases cannot be shielded, is also being gradually robbed of its caloric, and is very painfully alive to the process. On the other hand, neither more nor less than the exact surface required is exposed to the influence of the freezing mixture, and every point of that surface receives simultaneously the full effect of the anæsthetic."—(*Lancet.*)

"*Tumor of the Left Upper Jaw; Operation; Recovery.*—T. R., a Hindoo broker, aged 48, native of Bikaneer, admitted into the Medical College Hospital on December 27, 1868, with a prominent tumor of the left upper jaw. He first noticed the growth about two years prior to his admission, since which time it had been steadily increasing in size; it did not cause much pain. His general health had been uniformly good, and he had never suffered from fever or bowel complaint. The tumor seems to have originated in the left antrum, and to have extended mainly in the upward and forward directions. It was found to be nodulated, hard, and elastic to the touch. The integument covering it, though stretched and attenuated, was not adherent to its surface. It had produced complete absorption of almost the whole of the facial surface of the superior maxillary bone, and by its encroachment upward on the cavity of the orbit, it had displaced the left eye, forcing the globe laterally beyond the circumference of the orbital cavity. There was opacity of the lens, which, according to the patient's belief, had advanced *pari passu* with the growth of the tumor; the patient could not, at the time of his admission, distinguish light from darkness, the optic nerve being apparently paralyzed by the tension and pressure. There was no bulging of either the hard or soft palate, and the bony structures of the region were apparently in a perfectly normal condition. On December 29 the patient was placed under the influence of chloroform, and the tumor removed through a semilunar incision, commencing at the root of the nose, curving outward above the left nostril, and ending near the prominence of the cheek. The growth was well defined, and limited by a weak fibrous capsule; it had produced absorption not only of the facial surface of the superior maxillary bone, but also of the whole of its orbital plate, and, consequently, its removal exposed the under surface of the orbital fat, with the globe and its surrounding fibrous and muscular investments. On the inner side of the orbit the lateral mass of the ethmoid had undergone considerable displacement and absorption, but there was no extension of the growth upward to the cavity of the cranium. Four ligatures were applied; the cavity was carefully filled with strips of lint soaked in carbolic oil, and the edges of the incision then carefully brought into apposition with the aid of horsehair sutures.

A microscopic examination showed that the tumor consisted of an abundant fibrous matrix, containing within its meshes a considerable proportion of nucleated cellular material. For the first few days the patient was slightly feverish, and there was considerable swelling in the neighborhood of the incision; but the appetite remained unimpaired, and he slept well. The ligatures came away on January 1. On the evening of January 3 he passed several dysenteric stools, and purging continued slightly for a period of five days. On January 4 the horsehair sutures were removed, and by that date the whole length of the incision, with the exception of one or two small points, had firmly united, leaving a scarcely perceptible scar. The cavity left by the removal of the tumor was daily syringed from the mouth with a watery solution of carbolic acid, and then lightly filled with lint soaked in carbolic oil. On January 13 the whole wound had completely healed, and he was discharged."—(*Med. Times and Gaz.*)

Necrosis of Upper Jaw, etc.; a Novel Case, and Treatment. S. J. Cobb, Nashville, Tenn. (*Nashville Jour. Med. and Surg.*)—"A lady, who was so unfortunate as to lose, at the age of twenty, all of her upper teeth, except the three roots of the second left superior molar, over which she has worn a plate for ten or twelve years, called upon a dentist a short time ago, for the purpose of having the plate refitted, and he very naturally suggested the necessity of removing these loose roots from the mouth, which she readily consented to, and, in his effort to remove them, pushed them up into the antrum. The operation becoming a little painful to the patient, and frightful to the operator, it was no longer persisted in, but, in about eight hours from that time, they were blown out at the nose.

"I presume the floor of the antrum covering these roots had been necrosed and partially exfoliated for two or three years, from the fact that she has since called upon me to operate and treat for diseased antrum. In diagnosing the case, I found, from necrosis and exfoliation, not only the floor of the antrum covering these roots destroyed, but a portion of the ethmoid and inferior turbinated bones, making an opening sufficiently large for these roots to pass into the nasal fossa, from which they passed out at the nose. I also found that there had been a constant copious fetid discharge through the nose for five years, following an attack of erysipelas of the face.

"In operating, I removed all of the necrosed and exfoliated bone, after which I passed well up into the parts a small piece of sponge, thoroughly saturated in two parts carbolic acid and one tinc. of iodine. I then diluted, with soft water, the acid and iodine solutions, and syringed the parts well, and sent my patient home, with directions to use, as a wash for the parts, the compound acid, iodine and water; also to keep the parts well cleansed with tepid water, and to take, in the way of general treatment, ten grains of blue mass, followed by one or two doses of citrate of magnesia, after which to take, three times a day, twenty drops syrup of the iodide of iron. For two or three days after the operation the discharge slightly increased, as I anticipated, having used the strong solution of acid and iodine for the purpose of producing a sufficient sloughing to bring away such small detached pieces of bone as might remain somewhat attached to the soft parts. In the course of a week the discharge commenced decreasing rapidly,

at which time I fitted a plate and teeth to the jaw, covering the parts well for the purpose of keeping particles of food and other matter out of the antrum. At the end of twenty days' treatment, the discharge ceased entirely, and, upon examination, the secretions were found to be as healthy as they ever were."

"*Nunneley's Artery Forceps.*—In the operation for harelip, previous to any cutting with either scissors or knife, in order to get rid of the great annoyance of hemorrhage, which in young subjects is a matter of great moment, and in all cases, when it occurs, seriously interferes with the comfort of the operator, Dr. William Stokes, Jun., of Dublin (*Dublin Quar. Journ.*), invariably applies at each angle of the mouth one of the late Dr. Nunneley's artery forceps, and in all cases he has found that it effectually commanded the hemorrhage. Another advantage of these truly practical instruments is, that they enable the operator to dispense with the aid of assistants pressing with their fingers the lips in these situations, and of necessity impeding the operator to a greater or less extent."—(*Med. Record.*)

Tomatoes considered Unhealthy.—Dr. Dio Lewis thinks (*Sci. Amer.*) "the common impression that tomatoes are the healthiest of all vegetables is a mistake. If eaten at all, it should be with great moderation, and never raw. Tomatoes have sometimes produced salivation. Dr. Lewis knew a young woman who had lost all her teeth from excessive eating of tomatoes."

"*Tannin versus Alum.*—Dr. Max Jaffé, of Hamburg, contends (*Med. Press of Vienna*) that alum, so frequently used for gargles, is hurtful to the teeth, and holds that tannin, dissolved in water or red wine, is far preferable."—(*Lancet.*)

Cotton saturated with Chloride of Iron for Stanching Hemorrhage.—"Dr. Ehrle, of Isny, calls attention, in the *Schwäbischer Merkur*, to a simple preparation of cotton, which he has found of great service in surgical operations followed by great effusion of blood. The mode of preparation is as follows: American cotton of the best quality should be cleansed by boiling it for an hour in a weak solution of soda (about four per cent.), then repeatedly washed in cold water, pressed out, and dried. By this process it will be perfectly disinfected and adapted to more ready absorption. After this it should be steeped once or twice, according to the degree of strength required, in liquid chloride of iron, diluted with one-third water, pressed, and thoroughly dried in the air,—*neither in the sun nor by the fire*,—then lightly pulled out. The cotton so prepared will be of a yellowish-brown color. It must be kept very dry, as it is affected by the damp. Lint may be similarly treated, but the fine texture of the cotton renders it preferable. When placed on a fresh wound, it causes a moderate contraction of the tissue, and gradually coagulates the blood in and beyond the injured veins, thus closing the source of the effusion. This property of the chloride of iron is increased by the dryness of the cotton and the extended surface offered for the development of the chemical action."—(*Pharm. Journal* and *Drug. Circular.*)

Caustic Matches.—"We find the following useful hint in the London *Chemist and Druggist:* 'As it is of importance in the use of lunar caustic to have it free from all infecting matter from previous use, I took some common matches, and cut off the igniting portion; I then dipped their ends into lunar caustic, melted; by so doing, I obtained what I called caustic matches, which enabled me to use a fresh piece of caustic daily, free from infecting matter, which would not be the case if the same piece of caustic were used repeatedly, and not carefully cleansed. Besides which, this plan enables a minute point of caustic to be ready at any moment when required.'"—(*Boston Jour. of Chemistry.*)

Inflammation of the Lower Lip of a Peculiar Form.—"Prof. R. Volkmann, of Halle (*St. Louis Med. and Surg. Journal*), observed five times a peculiar form of chronic inflammation of the lower lip—*cheilitis glandularis apostematosa*—concerning which he finds no account in literature. All the patients were adults. Three had been suffering from constitutional syphilis a short time before. Two were quite healthy, and assert never to have been syphilitic.

"The course of the cheilitis was similar in the five cases, though of different intensity. The lower lip gradually swelled, without much pain, and became hard and firm, so as to give the countenance a coarse, disagreeable expression. The mobility of the lip was much impaired, —in one case lost. The swelling extended through the thickness and breadth of the lower lip, and down to its union with the chin. In one case it affected the upper lip about the corners of the mouth. The skin was slightly reddened. In all cases the mucous glands of the lip were swelled to the size of hemp-seeds or more, and could be felt through the mucous membrane in unusual numbers and extent as nodular masses. Their excreting ducts were much dilated, some of them large enough to admit a fine probe. Pressure, which caused but little pain, would evacuate from them a turbid mucus or muco-purulent secretion. In three cases abscesses formed. In one case the mucous surface of the lower lip showed from twelve to fifteen fistulous openings. In all cases an active catarrh of the mouth and fauces existed. Two cases were extremely obstinate, and left hospital with little improvement; the other three were cured in from four to eight weeks by the internal use of iodide of potassium, mouth washes of chlorate of potassa, and light cauterization of the lip. The disease being an inflammation of the mucous glands of the lip, the author proposes the names of *cheilitis glandularis* or *myxadenitis labialis.*"—(*Medical Record.*)

Borax, Domestic Uses of.—"Borax is the best cockroach exterminator yet discovered. This troublesome insect has a peculiar aversion to it, and will never return where it has been scattered. As the salt is perfectly harmless to human beings, it is much to be preferred for this purpose to the poisonous substances commonly used.

"Borax is also valuable for laundry use, instead of soda. Add a handful of it, powdered, to about ten gallons of boiling water, and you need use only half the ordinary allowance of soap. For laces, cambrics, etc., use an extra quantity of the powder. It will not injure the texture of the cloth in the least.

"For cleansing the hair, nothing is better than a solution of borax-water. Wash afterward with pure water, if it leaves the hair too stiff. Borax dissolved in water is also an excellent dentifrice, or tooth-wash."—(*Boston Jour. Chemistry.*)

"*Stains.*—To remove those of grass, grape-juice, and the like, from white garments, dampen the spot, and hold it over the fumes of a lighted sulphur-match."—(*Ibid.*)

Ozokerit, a Burning Earth.—"A curious industrial application of a hydrocarbon called ozokerit, found as a mineral product in Moldavia and Wallachia, has been made in England. A firm, noticing its brilliant light when burned, decided to experiment on it with the object of making candles. To all appearance this was a most unpromising idea. The ozokerit, in its natural state, is a dirty, brownish-black mass, and the public have been so luxuriously educated in the matter of illumination that nothing but a very handsome candle can compete with the lights of the present day. The success of the enterprise has, however, been perfect. By sundry processes of distillation and purification a beautiful white, hard, waxy substance is produced, handsomer than spermaceti, not so transparent as paraffine, but possessing a brilliant gloss, and melting at a temperature of 140° F. This high melting-point (paraffine being about 125° and stearine 130°) allows the employment of a larger wick, and this, combined with the naturally brilliant light of the ozokerit itself, makes the candles burn with a brightness exceeding that of any now in use."—(*Med. and Surg. Reporter.*)

"*Chlor-alum.*—A week or two since we spoke of the new antiseptic, the hydrated chloride of aluminium, now called chlor-alum. The last number of the *Chemist and Druggist* says: 'We mentioned last month that we should make certain experiments with this new antiseptic and disinfectant. As well as we can at present judge—and we have been very careful to arrive at a correct conclusion—chlor-alum possesses really marvelous antiseptic properties. It is superior in this respect to chloride of zinc, and is not poisonous. A piece of meat, smelling very offensively, soaked in a solution of chlor-alum, was rendered comparatively sweet in an hour. We confess that we were not so fully satisfied in trying it on drains. It was not by any means a failure, but its action did not seem so prompt as that of carbolic acid. It is sure to be a useful article, but much more extensive experiments are required to appraise its exact value.'"—(*Ibid.*)

Chlor-alum.—At a late meeting of the Association of Medical Officers of Health, "Mr. John Gamgee explained various experiments made by him, assisted by Dr. Dewar and Professor Wanklyn. He found chloride of aluminium to be a capital antiseptic. He exhibited a bullock's foot, ten months old, which had been steeped in the solution. It had no smell, retained its color, and, strange to say, was unassailable by parasites. He found this new agent as powerful as sulphurous acid, and yet without its destructive properties. He had tried it for surgical and medical purposes, and found that in every possible way it de-

stroyed the germs of putrefaction. Mr. Gamgee also described the value of a solution of sulphurous acid in alcohol."—(*Med. Times and Gazette.*)

"*Reactions of Water-Glass.* Dr. F. A. Flückiger. (*Bayerisches Industrie* and *Chem. News.*)—The author has instituted a series of experiments on the action of various salts soluble in water upon the so-called water-glass, solution of silicate of soda. As a general rule, the author found that the soluble salts of potassa, soda, lithia, and ammonia, more readily in water, possess the property of throwing down silica from a concentrated solution of silicate of soda. The experiments were made with a solution of silicate of soda of 1·392 sp. gr., which contained so slight an excess of soda that a single drop of alcohol or a very weak acid, immediately precipitated silica from the solution. One part of this silicate solution diluted with 29 parts of water gives, with a solution of sal ammoniac (1 of salt to 8 of water), upon being gently heated, a precipitate of silica. Caustic ammonia (sp. gr. 0·921) separates from the silicate solution, when cold, silica, but the precipitate is redissolved on heating. Propylamine also decomposes the silicate solution. The bromide and chloride of potassium in cold saturated solutions decompose the silicate solution on heat being applied, but not so in the cold. A drop of bromine, a single bubble of chlorine gas, a drop of creasote (Reichenbach's), a drop of carbolic acid dissolved in glycerin, also dilute solutions of albumen and gelatine, or glue, decompose the silicate solution, which is similarly affected by a solution of gum-arabic; while, on the other hand, other kinds of gum and mucilage, sugar, dextrine, glycerin, and urea do not decompose the silicate solution."

"*Sodium as a Flux for Minerals.* By Dr. Schonn.—A steel crucible, one and a quarter inches deep and the same in diameter, is heated over a lamp; into this is projected a few pieces of metallic sodium, and afterward the finely-divided and dry mineral is added. The crucible is then covered and heated red-hot. As soon as the reaction is finished, the contents of the crucible are allowed to cool, and water is cautiously added, sufficient for the purpose of filtration. The fused mass is then thrown upon a filter and thoroughly washed. In the filtrate will be found the electro-negative constituents of the mineral combined with the sodium, such as sulphur, cyanogen, chlorine, chromic acid, silica, molybdic and tungstic acids, and such oxides as are soluble in soda-lye. On the filter will be found the metals and their oxides; also the lower oxides of titanium, molybdenum, tungsten, and possibly silica and alumina. The contents of the filter and the solution in the filtrate can be further treated according to the order of analysis. In this way all minerals can be readily resolved, and their constituents determined either qualitatively or quantitatively."—(*Chemical News.*)

"*Aluminium in Batteries.* W. Nettleton.—I have tried the metal aluminium as a substitute for platinum, in a Grove's battery, and the experiment is quite successful. Two small cells—the size of the Al. plates being four inches by one and a quarter—decomposed water very energetically. The metal aluminium possesses the advantage of costing

(for equal surfaces) about one-tenth the price of platinum. I obtained it, price five shillings per ounce, cut to size as ordered."—(*Ibid.*)

"*Gun-Cotton exploded by Camphor Vapor—Artificial Ivory.*—At the last meeting of the Chemical Section of the Lyceum of Natural History in New York, Prof. Charles A. Seely related a curious experiment which he had just tried. He prefaced his description by remarking that, as was well known, negative gun-cotton, or that used by photographers and others for the production of collodion, was soluble in an alcoholic solution of camphor. As alcohol had no solvent power on this substance, it was evident that this effect must be due to the camphor; and this consideration had led to the mechanical mingling by trituration of wet gun-cotton with solid camphor, which resulted in the production of an artificial ivory of the most admirable quality. In fact, billiard-balls, produced by submitting the above mixture to hydraulic pressure, and then coating with a compound of gun-cotton and castor-oil, were pronounced by experts to be superior to the natural ivory.

"From the above facts, Prof. Seely was led to experiment on the influence of camphor vapor on gun-cotton. Placing some fragments of camphor in a test-tube, and closing its upper end with a plug of gun-cotton, the tube was then set in a water-bath, with the anticipation of finding some effect discernible with the microscope perhaps in the course of a few hours.

"Before many minutes, however, the tube was observed to be filled with red vapors; and then the gun-cotton exploded with a violence which led to the belief that if the experiment were repeated with a drachm or so of the cotton, it would be attended with danger to the operator.

"This suggests the possibility of some risk in the manufacture of the artificial ivory before mentioned, and leads to a query as to what may be the behavior of the same substance when exposed to an elevated temperature or when brought into contact with an ignited body."—(*Jour. Franklin Institute.*)

Thermo-plastic Putty.—"A new glazing-putty, known as 'thermo-plastic' putty, has been recently introduced into England, and applied to fasten glass into the roofs of railway-stations, green-houses, and other structures where iron sashes are employed. This article hardens in a few hours after being used; but, when exposed to solar heat sufficient to cause an expansion of the glass and metal, it becomes plastic, and on cooling again hardens to its original firmness, thus obviating the danger of breakage, which is so frequent when ordinary glazier's putty is employed."—(*American Artisan.*)

Electrical Conductivity of Metals to determine their Purity. A. M. Mayer.—Pouillet remarks (*Amer. Jour. Sci. and Arts*) "that the purity of a metal is most readily determined by a measure of its electrical conductivity. The electrical test of purity, however, exceeds in delicacy the chemical examination; for a very minute percentage of alloy causes a great increase of resistance, and if we could be sure that the wires we compared were in the same physical condition as to annealing or

hardness, we could probably use this method as a means of determining the percentage of a *known* metal which formed the alloy."

"*Simultaneous Boiling of Two Liquids which are not Miscible.* A. Kundt.—The chief point of interest in this paper, wherein the author gives an account of a series of experiments made with water and benzol, water and oil of cloves, water and sulphide of carbon, is, that two liquids, not miscible with each other when in contact, boil at a lower temperature than when the most volatile of these liquids is brought to ebullition by itself."—(*Annalen der Physik und Chemie* and *Amer. Chemist.*)

"*Alleine Artificial Stone.*—A new artificial stone, formed by means of carbonate of baryta, has recently been invented by Monsieur Alleine, of France. He first prepares the carbonate from the common sulphate of baryta, by converting it into the sulphuret of barium, and then, by the aid of chloride of zinc, into the chloride of barium, and this again, by means of the carbonate of soda, into carbonate of baryta. The artificial stone consists of two equivalents of silica, three of silicate of alumina, and ten of carbonate of lime. This mixture, having been first ignited, is ground into powder, to which is then added three equivalents of powdered carbonate of baryta. The dried mixture is passed through a sieve, and kept in closed vessels, free from contact with the air. When wanted for use, the mass is mixed with water, and next moulded into the desired shape, yielding, on becoming dry, a very hard, stony material."—(*Phila. Ledger.*)

"*Cement Water-Pipe.* — In our articles on water-pipes we omitted to direct attention to a form of pipe constructed wholly of hydraulic cement. It is very cheap; and when it is desired to construct aqueducts for supplying barns, stables, and private establishments, nothing can be better. It is formed by digging a trench below the frost line from the spring or reservior, and then using a flexible rubber hose pipe, of the desired capacity, as a *mould.* Cover it with cement, of an inch or two in thickness; and as it hardens, draw it along, adding fresh covering of cement until the whole line is completed. In this way an expert workman will construct many rods of the pipe in a day, and it will cost comparatively but a trifle. This pipe is very strong and durable, and conducts water without any deleterious contamination."—(*Boston Jour. of Chemistry.*)

"*Repairing Porcelain Evaporating Basins when cracked.* — Dr. Waltl recommends, first to dry the vessels thoroughly in a drying-stove, and next to fill them with a rather concentrated solution of silicate of soda, and leave the solution in the vessel for about twenty-four hours after the liquid has been poured out. The vessel is gradually dried at a gentle but increasing heat, and it will then be found to hold liquids again and be fit for further use."—(*Chem. News.*)

Credit to the *Medical Press and Circular* for the article on the "Correlation of the Physical and Vital Forces" was inadvertently omitted in the last number of this journal.

THE

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ORIGINAL COMMUNICATIONS.

NOTES FOR A MEMOIR ON THE PATHOLOGY OF THE TEETH.

BY A. C. CASTLE, M.D.

Read before the First District Dental Society of New York, Dec. 28th, 1870.

MR. PRESIDENT AND GENTLEMEN,—A few evenings since, at a meeting of this society, a gentleman made the positive assertion that when carious teeth were properly filled, as he filled them, they would endure forever. An important *desideratum*, if true. The object, then, of discussing the anatomical character, the physiological intention, and the pathological condition of the dental system, claims our attention, to the end of ascertaining whether the dental organs possess a pathology or not, or how far the thirty years' experience of the impercipient faculties of this gentleman's assertion can be sustained; while it is the province of these notes for a memoir on the pathology of the teeth to demonstrate that the dental system holds pathological communion with the whole body, and that medicine possesses the power of reaching the abnormal changes in dental disease.

Medical history has among its records that "once upon a time" "charms" were chiefly relied upon for removing disease. After charms simple remedies were resorted to, and to these remedial agents *chance* and *experience* added vegetable and mineral poisons. "Wherefore," asked Pliny, "has our mother earth brought forth so many poisons, but that when we are wearied with suffering we may employ them for suicide?" The savage Carib and still more savage Boschman reason differently: they believe that poisons were sent to them for the destruction of their enemies; while the believers in an overseeing Providence assume that the beneficence of the Creator sent all things into the world not for the destruction, but for the benefit of his creation.

The history of the dentist's art furnishes us with a similar sequence. First, "charms" were relied upon for the cure of dental ills—the toothache; then simple remedies were resorted to, and then followed

poisons, vegetable and mineral; and then came the dental savage, who does not assume that the beneficence of the Creator made these organs for a special purpose, but who extracts from the jaws the whole dental family, thereby removing all pathological anomalies by substituting what he terms "an artificial denture," which I presume is meant and intended for artificial *denticulation*. There are many others, however, whose rational philosophy and purer motives,—believing in the beneficent intention of nature,—make them hesitate before they destroy the design and the purpose of the dental organs. In this rational philosophy true wisdom, true science, and true art unite in supporting each other against the irrational conclusions of mere babblers.

"Ask what I shall give," said the Lord to the dreaming monarch. "An understanding heart to discern judgment," was his simple, modest request. The spirit of inquiry has an honest reverence for truth, and a profound contempt for all that is false and for all that is factitious. By the light of scientific progress the searcher after knowledge discovers many things, while at the same time he finds that there is an inner temple of mystery into which the human mind cannot enter. Let us beware how we commit ourselves. This caution especially affects those who have not deemed it to be their first duty to examine into the natural laws bearing in their regular order, whether in health or disease, upon the economy of the animal system.

If the assertion be correct that when teeth are properly filled they will endure forever, the task of discussing the pathology of the teeth, or indeed any other dental subject, is entirely useless and altogether unnecessary; for here we are told, *in fact*, that the teeth are simply an inert, incorruptible mechanical substance, which, by a mechanical addition, can be rendered durable forever. The cause of decay, however, is the first obstacle encountered, and presents a curious anomaly—the teeth can be rendered perfect while they are imperfect. The replacing by an amalgam or gold filling the decayed lost substance of the dental organs, will secure them from offending ever after, and will make them endure forever—a happy consummation devoutly to be wished for; the mere ideal of which at once suggests a happy thought. Would not the making holes into the dental organs, and properly filling the said holes with amalgam or gold, not only serve as a prophylactic against decay, but at the same time preserve the glory of the dentist's art forever?

At the present moment the science of the dentist's art is in a state of transition from its embryonic condition to its gradual development, and if to serve this end, multiplicity of teachers, boldness of speculation, and profundity of theory were all that were necessary to illuminate any subject so that the understanding might comprehend it with the least possible exertion of its powers, then, unquestionably, dental pathology,

in all its aspects, should stand as clearly revealed as the sun in the heavens. But, unfortunately, a multitude of words does not always enlarge the boundaries of knowledge; and abstract theories, however ingenious, are rarely more substantial than the pasteboard architecture of our childhood.

Wishing to treat this subject with the seriousness it demands, I should be sorry to utter one word of reflection upon the elaborated chemical and microscopical analyses of the teeth "after" Berzelius, Hunter, and others,—the admirable efforts made to show that they are part and parcel of the osseous system; and, on the other hand, that they are only extraneous matter, deposited as mere mechanical instruments in the maxillary bones, and enjoying a democratic independence, free from all sympathy with the several systems, forming together one harmonious whole, which the philosophic prince so eloquently apostrophized: "What a piece of work is man!" But from my point of view my humble opinion is that writers on the pathology of the teeth have, in general, been more learned than accurate; more ingenious than practical; and following in a *beaten* track of mere speculation, they have constructed a very elegant "system," which wants only one thing to make it perfect, and that is simply a foundation in nature. These writers have altogether overlooked *constitutional peculiarities;* and, while they have gone on analyzing the substance of the teeth with the greatest patience and care, regardless of the constitutional character of the various teeth, they have left almost wholly out of view the exciting causes of nervous and organic, and the chemico-mechanical, influences produced upon them by various external and internal agencies. This error, thus stated in broad and general terms, has almost uniformly characterized the literature and the scientific discussions and debates upon the diseases of the teeth. Thus we have had presented to us an unmeaning pathology, based upon mere abstract speculations, while the *diathesis* or peculiar constitutional habit of body of each and every individual has been entirely lost sight of, though practical experience teaches and observation demonstrates to us that *there, and there alone,* can we discern the causes of each pathological condition, and of the numerous abnormal formations and secretions, as well as the many variations in the organization, ossification, and densities of the different teeth. Variations and conditions so marked and adverse that, while one individual may triturate glass with his teeth, another is subjected to excruciating torture by the mere touch of the finger-nail or a quill toothpick; such remarkable structural difference exercising, of course, peculiar influence upon the physical appearance, as well as upon the healthfulness, usefulness, and permanent durability of these organs.

As you all well know, the teeth are bones of peculiar structure, and constitute a portion of the osseous system; their component parts are

similar to the other bones; but as they are intended for purposes requiring and resisting mechanical friction, their relative proportions of constituents are considerably altered to secure to them denseness, hardness, and strength. We therefore find that the inorganic or earthy matter is in increased proportion, while the crowns and necks constituting the body of the teeth are covered and protected by a hard, crystallized enamel, which, in a modified crusta petrosa, terminates on their necks and fangs.

To give vital susceptibility apart from their original uses in assisting their organization, the teeth are supplied with filaments or twigs from the grand sensitive nerve of the face and motor nerve of the jaws,—the fifth pair of nerves; this pair of nerves anastomosing with the seventh pair of nerves forming the *respiratory* nerves and those of expression of the face. The twigs of the fifth pair of nerves, entering the foramina or small holes at the end of the fangs, gradually enlarge with the dental tube until they terminate in ganglionary "pulps" in the chambers of the teeth. Entering with each twig is a complete vascular supply of arteries, veins, and absorbents, which spread over a delicate membrane lining the dento-nerve canals and chambers within the teeth. These nourish and give sensibility to the substance, while in old age we find them secreting and depositing dentine within the nerve canals, and by obliterating the nerves, devitalizing the bone of the teeth, by filling in and solidifying each tooth severally into one mass.

By this elaborate organization, and their direct connection with the grand nerves of sensibility, respiration, and expression of the jaws and face, do they not afford us ample evidence that the dental system is in harmony with pathological sympathies with every organ of the body? Yet we are told that a plug of gold in a hollowed tooth will preserve it forever.

Is it not singular, after hundreds of years' experience, that up to this moment physicians, surgeons, oculists, nor dentists have ever suspected, or if they have suspected, they have never applied their understanding to investigate and demonstrate, the pathological-sympathetic affections of the dental system with the other organs. They know that earache is sympathetic with diseased teeth. It is a popular idea, but it has no foundation in fact, that the "eye teeth" are in direct connection with the organs of vision; but, the irritation of the dental nerves, singly or generally, by dento-pathological sympathy, does superinduce *muscæ volitantes*, or motes or cobwebs, or small rings and minute disks, to float before the eye and impede the vision; that strabismus, and pains in the dense fibrous sac containing the humors and forming the eyeball, are frequent sympathetic affections of dento-neuralgic irritation; that the same nervous sympathetic influence acts upon the epiglottis and windpipe, causing spasmodic coughs and pseudo or false

croup, symptoms in teething children. It also affects the organs of respiration in grown persons; and many an individual has been cured of consumptive symptoms, either by a medical attendant or some quack medicine, when the dentist should have received all the credit for his perfect treatment of the teeth, although in a state of happy innocence of his own doings, or of the sympathetic nervous irritations often affecting the dental and the respiratory systems. These are but a few of the instances offering sufficient illustration of dento-neuralgic influence upon the various organs.

By the following table of analysis of the comparative divisional components, the one of the three parts exhibits a large excess of gelatinous tissue in the *crusta petrosa*, for the purpose, no doubt, of being the medium of directly supplying the teeth, externally, with the vitalizing influence and protection of the maxillary alveoli periosteum :

LASSAIGNE'S ANALYSIS.

	Bone.	Enamel.	Crusta Petrosa.
Phosphate of lime with fluoride of calcium...	67·54	81·63	53·34
Carbonate of lime....	7·97	8·83	3·98
Phosphate of magnesia....	2·49	2·55	......
Soluble salts....	1·00	0·97	......
Gelatin tissue....	20·42	5·97	42·18
Fat....	0·58	......	......
	100·00	100·00	100·00

It will be observed that over fifty per cent. of the *crusta petrosa*, forming the connection of the softer bone with the investing *periosteum* covering the fangs, is of gelatinous tissue, which, as we shall hereafter show, plays an important part in the pathology of the teeth.

By way of episode or parenthesis, I may here be permitted to say that, while "man proposes, God disposes," or in other words, Nature is our best friend; that she acts for us as honestly as she can, and that she does not find her account in causing or prolonging disease; that she adopts her *own* time, her own means of *vitality*, and her own plan, by her own immutable laws, to develop her work. We may force her, but we cannot control or alter her laws; we may medicate, we may feed by the mysteries of "chemically prepared food," "rational (?) food," phosphatic medico-scientific nutrition; yet all our appliances made to reach the goal of our intentions may be summoned up in the stereotyped medical axiom, "*Improve the general health*;" and ever-beneficient Nature and her laws are left in silence to accomplish the rest.

At the infantile period, when the greatest mobility of the organization exists, the animal economy avails itself of the nutritive material furnished, first from the maternal milk, and afterward from more solid food; and, notwithstanding that both the milk and the solid food con-

tain all the necessary elements for the perfect development of bones, sinews, ligaments, and muscles, we find that the periodic action of nature's laws cannot be forced nor changed. Thus we find that, from the commencement, and throughout the whole period of the primary dentition, while the first or milk teeth are being formed of corpuscular and molecular soft gelatinous predominance, the *same nutrition* is depositing an entirely different molecular arrangement of solid, dense bone basis for the formation of the permanent teeth *immediately behind* the deciduous teeth. We might ask why the milk teeth do not partake of the better nutrition; but we find the very opposite, and, absolutely, while nutrition is forwarding the completion of the permanent, the dental absorbents are actually sucking away and removing the temporary teeth, and, for aught we know to the contrary, the absorption of the molecules of the one giving its particles of nutrition to the other.

I would call your attention to the fact that the formation of the teeth, in the second dentition, is at that period-time of the animal formation, as a general rule, when the digestive organs are in good condition, and when assimilation and nutrition bear with all the vigor of the vital forces on the animal economy for the perfect development of the being. This process we find to be in harmony with the peculiar constitution of each several individual; and, in accordance with the constitutional organization, the teeth present no better construction, and they are of *no higher* grade of character or excellence, and *no lower*, than being in agreement and consistent with the structure and connection of the other parts of the organization characterizing the nervous force of each and every individual animal system in which they are severally organized. In the history of physiological lore the anomaly never has presented itself of large, dense, yellow teeth, of the granite-like constitution, ever having been found in the *alabaster* sero-lymphatic temperament, or *vice versa.* Finally, the eruption of the *dens sapientiæ*—wisdom teeth—only tends to increase our puzzled senses. Formed as they are during the full tide of vigorous health and nutrition, in a large majority of persons we find them little better in character and quality than the "milk teeth" of infancy, often making their appearance in the shape of a limy and gelatinous admixture, without organic combination. It is only in those persons of the granite-like, or original strong constituted organization, that we find the *dens sapientiæ* possessing the strong constituents of properly organized teeth.

The elementary constituent difference existing and physically characterizing the deciduous teeth, apart from their size and formation, from the permanent teeth of the adult, is great. The enamel of the milk teeth is nearly of a milk color; it contains less lime and more gelatin than the enamel of the permanent teeth; while the *crusta*

petrosa of the necks and fangs, as well as the substance of the teeth, contain more than fifty per cent. of gelatinous matter, so that only with difficulty it can be defined from the bone and its dental periosteum; in short, the milk teeth are constituted little better than enameled ossified cartilage. Here, then, is the proof of the intimate connection of dental pathology with that of the general system; the milk teeth being required only for the temporary purpose of comminuting the softer food suitable to infantile nutrition, they are constructed of more animalized matter, soft, and easily absorbed; and, by the dental organic laws, as the permanent teeth are advanced in their development, the dental absorbents are excited into the action of absorbing the obstructing ridge of the alveoli, as well as the obstructing roots of the temporary deciduous teeth. In vigorous, healthy children this process is gradual and perfect; the fangs are sucked away, until their crowns only remain slightly attached to the gums, when, in a *sound* condition, they are pushed from the mouth.

In the second dentition we find, then, that in agreement, and in accordance with the constitutional peculiarity and strength of development of the individual, gelatin and earthy tissues are in perfect organized union, as the substance of the teeth was originally intended, in its physico-physiological-pathological-mechanical harmony, of construction and organization with the general system of the animal body.

As age advances in accordance with periodic natural changes or cause, the gelatinous tissue is gradually absorbed from the substance of the bone; this may also be observed in the bones of the cranium. The absorption of the gelatinous constituent of the teeth is often prematurely superinduced by the accidents of the *materia medica*, exhibited in diseases of the body, mercury, quinine, iodine, iron, arsenic, etc.; by the smoke and juices of strong tobacco destroying the vitality of the *crusta petrosa;* by continuous indulgence in alcoholic beverages. The slow and continuous absorption of the gelatin tissue leaves the earthy matter in excess, and with this loss of gelatin they are devitalized, until they are left brittle and in a condition of complete atrophy.

It is not my intention to dwell upon the pathology of the first dentition, further than to illustrate the continuity of the constitutional pathognomonic peculiarity of the original foundation of the permanent teeth.

It is well known that the formation of the teeth is begun long before the fœtus leaves the uterus. The process is comparatively slow, and it is not completed until some time after birth. It is not necessary here to trace the original rudiments of the teeth to the third year of their growth,—at which age the child usually possesses all the teeth of

the first dentition;—suffice it to say, that these continue in the maxillary bones until the sixth or seventh year, and as the permanent teeth all this time are progressing, we find twenty-eight of these teeth hidden behind the deciduous teeth. The whole process and progress of dental organization to the physiologist, the pathologist, and to the dentist, is as curious as it is instructive.

The general aspect of the first set of teeth in all children is nearly the same, whatever the constitutional peculiarity may be, *although* a very marked difference exists in their elementary constituents. In some constitutions, however, a marked distinction is exhibited even to the most unobservant. It may be seen in puny, weak, strumous, scrofulous, rickety children.

Scrofula and struma are dependent upon a peculiarity of constitution derived from one or both parents. These diatheses are modified by intermarriage. One of the parents being of "good, sound constitution," and the other either strumous, or scrofulous, or phthisical. The children of such parentage present the physical appearances of the diathesis they inherit—a fair and fine skin, light hair, large blue eyes, with dilated pupils, and dull sclerotica, and delicate, transparent complexion. While in others the skin is dark and of peculiar hue, or it is of a rough, dirty appearance; the hair is dark, the upper lip is thick, as if tumefied or swelled; the countenance is sallow or tallowy, and appears swollen or puffed.

In strumous and rickety children, we are often called upon to prescribe for deficiency of ossific material in the formation and organization of the bones of the osseous system. We find, in these cases, that the natural process of ossification does not progress properly, or that it is at a perfect stand-still; that the bones of the cranium remain in an incompleted condition; that the *fontanelles* and *sutures* do not close; that the teeth not only are slow in their formation, and do not make their eruption until late, but that they are imperfectly constituted, and therefore very imperfectly developed; they are exceedingly soft in texture, and while they are loose in their sockets, the cartilaginous character of the *crusta petrosa* (like that of the milk teeth) is so firmly attached to the lining membrane—periosteum—of the *alveoli*, that portions of the alveolus frequently are brought away apparently conjoined with the bone of the extracted tooth; these teeth frequently exhibiting themselves almost in a state of disintegration; or they are soft, green, painful, loose, and carious. In these persons it will be observed that the os frontis—the bone forming the forehead—is prominent, and the head, though smaller than usual, is generally large in proportion to the face.

In these notes for a memoir on the pathology of the teeth, I do not deem it necessary to describe or to enlarge upon the changes observable

in these teeth of scorbutic diathesis; my object having special reference and bearing in illustrating the constitutional marks and characteristics of the several orders and classes of teeth as they are formed and developed in persons differing in constitutional temperaments, and varying in their habits of body or diathesis; whereas, in the third and fourth order of classes, as illustrated by the scorbutic-formed teeth, we find that the animal economy refuses to assimilate nutrition with the requirements of the body—to supply the necessary or normal quantity of elementary constituents for its mathematical or exact organization to represent the highest order of physical development. In these defectively constructed teeth we have a perfect illustration of defective nutrition, or malassimilation of the food with the blood, leading to a deficiency of the phosphates and other constituents required in the organization of hard bones and the ivory-like, hard dental bone. On the other side, again,—for nature is full of opposites, although cause and effect are the same,—we find in the dental organs of scorbutic diathesis *a deficiency* of gelatinous tissue and *an excess of lime*,—too much lime rendering the teeth of calcareous brittleness; whilst the other class presents teeth little else than ossified cartilage; all this, too, in defiance of, and, as it were, in opposition to all our efforts in securing a proper maternal milk; or in the absence of this, "condensed milk," —which is not milk at all,—or cow's, or ass's, or goat's milk, and the several preparations of food which our speculative, experimental knowledge renders us so much more capable of supplying than nature is appropriating. In humility we are compelled to confess that all our efforts appear to be successful no further than the peculiar condition, habit of body, and vital force of the animal system will allow nutrition to be exactly appropriated, or that the illy assimilated metamorphosed blood will supply.

Medical learning, knowledge, and skill, with the practical experience of thousands of years devoted to observing and *curing* the abnormal conditions interfering with nature's intentions, have only added to the accumulation of negative evidence, all of which has been made to culminate in one comprehensive sentence, to wit: "*Improve the general health!*" i.e. *by good nursing!* By good nursing is meant *good food*, of a quality and quantity suitable and adapted to the age and to the digestive powers of the patient: by tonics, by pure air, and all the means *common sense* may indicate. With all these—notwithstanding the well-directed means and appliances of every known chemical and natural remedy, whether in the shape of phosphate, carbonate, change of nurses, and of climate; notwithstanding the child's animal system is at its period of greatest mobility, with the natural dynamics bearing upon the whole animal economy; while the child has nothing more to do in assisting the metamorphosis of its food, than to eat, drink, play,

and rest; yet years often elapse before a change for the better is effected; and even then it would appear that the change is a spontaneous one, produced by the mysterious occult acts of nature, which neither our medical experience, nor our pathological lore, nor the acumen of our observations, can or will furnish us with sufficient cause to explain. Yet we have been gravely told by some writers and some speakers, that at will *they can and do replace the enamel, the substance of the teeth, and even the alveolar processes of the maxillary bones*, by medical treatment and chemical food, even in advanced periods of life. This, too, in the face of the demonstrable truth that after the age of thirty-five atrophy of the fangs may be seen commencing in ninety per cent. of the teeth of the whole human family.

I have thus far indulged in a few practical observations on this interesting, and, to the dentist, highly important subject for his investigation. I offer them with very great deference, hoping that my unpretending "notes" may be accepted as a slight contribution toward a more accurate and sensible dental pathology than has hitherto been permitted to govern the mass of the dental profession, whose panacea for the removal of all dental ills appears to be, either mechanically filling the teeth with foreign substances, or extracting them, and replacing them with artificial substitutes. I am also led into indulging a further hope, viz., that the practical study and careful observations derived from forty years' close application to the medico-surgical practice of the dentist's art, illustrated by these "notes," may prove to be of some value to assist the diagnosis of the dental practitioner, and I add, more especially the *medical practitioner;* for here I may be permitted to observe that I have too often seen instances in the practice of medicine in which the medical attendant and patient were alike placed in an uncomfortable and compromising predicament, in consequence of the want of information, or a contempt for a matter which medical dignity may very erroneously have been in the habit of regarding as being beneath its attention or notice.

Still another hope stimulates and influences me: that the dental practitioner will find and acknowledge that something more remains to be done; that something more is required to make the teeth "endure forever," or even for a lifetime of threescore and ten, than the mere mechanical, expert manipulation of plugging up the hollows in teeth with gold. When we are brought to reflect upon the constant sameness which prevails through the works of Nature, that she constantly moves in a circle, we observe that in the immense variety of developments an inconceivable waste of elementry particles takes place—particles that never reach the parts in the animal organization where they are needed. Does not this apply most emphatically to the dental organs of almost everybody? Look at the enormous quantities of

phosphates carried from the system every minute, hour, day, month, and year by the skin and kidney emunctories, by the intestinal evacuations, and by the saliva and other secretions. We were told at the dental convention held in this city two or three years ago, by Dr. White, that he constantly renewed the enamel and the bone of teeth by administering phosphated chemical food. Now, when I tell you that from fifty to one hundred—yes, even to one hundred and fifty—pounds of phosphates, carbonates and other bone material are annually thrown away from the body, perhaps you may be able to arrive at some theoretical conclusion as to what results Dr. White's few grains *per diem* of phosphates might produce in such remote organs as are the teeth. The animal economy avails itself of the nutrition required by the peculiar vital principle acting within and upon each constitution. It appropriates no more and no less than the vital principle stimulating the organs will permit. We will also find that, so long as the constitutions of men differ from each other as they do, so will there be the same great variety in the physical character and pathological condition of their dental organs; that the blood—which is the fluid source from which the teeth, the bones, tendons, muscles, nerves, eyes, hair, membranes, blood-vessels,—in short, every part and atomic particle of the whole organized body—are metamorphosed; that each part is mathematically adapted to its natural, proper place, and yet in so harmonious a manner that the human mind is totally at a loss to comprehend how the arrangements of the operation are performed: but the fact remains. The blood, although comprehensively similar,—I deny that it is exact in man,—yet in each individual it is *sui generis*, or peculiar to himself, and suits and accords with the body *only* to which it belongs and in which it is generated. This peculiarity of blood presents the diathesis or "habit of body" of each particular individual man, woman, and child, and thus with each particular habit of body and temperament the teeth will be found to be in physical and pathological harmony.

For the purpose of illustrating and demonstrating this truth, I have divided the dental organs into four generalized groups or classes, according with their physical appearances, and in connection with, and significant of, the peculiar diathesis and pathological disposition of those constitutions to which I have referred. There are four groups:

I. The large, dense, yellow teeth.

II. The dense, yellowish-white teeth.

III. The chalky-white, the semi-transparent yellow-white, and the dead-yellow, chalky teeth.

IV. The semi-transparent white, the dead, chalk-white, and the bluish-white, pearly teeth.

The possessors of the large, dense, yellow teeth present a solid,

firmly-knitted frame, great muscular development, a sound constitution, and full, vigorous health. Those of the second class, while they possess these physical qualities in a less marked degree, their features presenting a softer expression and their lineaments a full and rounded form, do not the less enjoy the general good health allotted to man. The third class, the chalky-white teeth, and the semi-transparent yellow-white teeth, and dead-yellow, chalky teeth, denote a strumous diathesis; and the fourth class, the semi-transparent white, the chalk-white, and the bluish-white, pearly teeth, *so much prized and poetized*, bespeak for the unhappy possessor a predisposition to scrofulous or tubercular phthisis.

To complete these notes upon the pathology of the teeth would require, as you will readily perceive, several evenings to discuss the groups in the order I have presented them to you. I therefore conclude this paper with the remarks, that perhaps there is no region upon the face of the globe that affords such demonstrable proofs of the notes I have presented to you as do the United States; the climate exhibiting the extremes of heat and cold—often varying 40° Fah. between meridian and midnight; moisture is excessive, the rapidity of evaporation extraordinary, and therefore the extremes of humidity and dryness. The effects of such noxious influences upon the general system, thus combined, are too obvious to be lost sight of, nor can these noxious influences be more strongly illustrated than by the impression they make upon the nerves and the development of scrofulous affections. Should the foreigner escape these injurious influences, his offspring suffer to the greatest extent, first among the Irish population, next among the German, and lastly among the Scotch, English, French, Spanish, etc., who, perchance, until this moment, never suspected a taint in their blood; and hence the filling up of the bills of mortality by the thousands with that dire and fatal disorder, "scrofulous consumption."

Thus are they disposed to lament their fate, and ascribe to various causes the rapid decay and loss of the teeth, "when their parents had never lost a tooth." The exemption, however, is only in favor of those retaining, *pari passu*, their original native strength of constitution; and may be accounted for by the order of their lives—the parents partaking regularly of the simplest kind of nourishing food; enjoying, *ex necessitate rei*, plenty of out-door exercise and regular rest, free from mental exaltation, depression, or nervous excitements, and ignorant of such an affection as nervous dyspepsia, or of indigestion, and all their concomitant evils. But here, where the lowliest manage to partake of the most deleterious domestic compounds and luxuries, which in the old countries are either unattainable, or would not be permitted to reach even the tables of the affluent, except upon occasions of friendly hospitality.

Under these circumstances, what can we expect, with our hot-house, modern-improved mode of living, breathing the in-door carbonized and sulphuretted atmosphere, in place of the oxygenated atmosphere, the *one only gift* which God has given to stimulate and purify our blood; never walking when we can ride; never sitting when we can lounge; our only mental excitements, to make money quickly and spend it faster?

In this eagerness after dazzling hoards of Mammon and "brown-stone fronts," in the nervous excitement after ostentatious dissipations, hardly a man or woman, medical or non-medical, ever for a moment pauses to observe the order of nature. Not one of them seems to know, or, knowing, appears to care. In their utter indifference they overlook the fact that each individual is truly, peculiarly, and professedly the pupil of nature; in short, his own physician.

It is the immutable principle of Nature to proceed in every step of her operations by degrees. All outrage and extravagance militate against her established laws. Is it at all strange, then, that the constant abuse and violation of nature's laws should so rapidly fix upon us "all the ills that flesh is heir to," involving "liver complaints," "consumption," scrofulous diseases, etc., and the all-comprehensive dispepsia, with all the horrors of its influence upon the mind and upon every organ of the body? To such an extent does this disorder manifest itself among our people, that indigestion may be considered a national manifestation of gastric debility; the teeth, like the worn-out *vedettes* of a beaten army, giving early tokens of functional or organic disaster.

HEMORRHAGE ATTENDANT UPON LANCING AN ALVEOLAR ABSCESS.

BY J. H. M'QUILLEN, M.D., D.D.S.,

PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

Mr. H. T. recently called upon me with a severe hemorrhage from the gum posterior to the left central incisor. There was an abscess at the root of the incisor, attended with considerable swelling of the soft parts. Within the palatine arch the swelling was so great as to almost obliterate the concavity of the roof of the mouth on the left side, formed by the palatine process of the maxillæ. The patient had called upon a fellow-practitioner, who had passed a lancet into the gum immediately posterior to the incisor, with the hope of reaching the abscess; but, in place of that, he merely divided some capillary vessels enlarged by the engorged conditions of the part. The hemorrhage from these was quite profuse, and having continued for several hours, the patient had become alarmed. In passing my finger over the swelling within the

arch, I could not find any evidence of fluctuation; but on raising the lip, fluctuation was quite perceptible in the gum under it. Thrusting a lancet quickly and deeply into the abscess, there was an immediate discharge of a large quantity of laudable pus. This was attended almost immediately by an arrest of the hemorrhage. No further treatment than this was demanded, as the hemorrhage soon ceased altogether.

This case reminded me of an experience which I had, some twenty years ago, when a student of medicine. I was engaged in the practice of dentistry at that time, and had as a student, Dr. J. L. Suesserott. During the time he was with me an abscess formed at the root of one of his central incisors, with very great swelling in the palatine arch. I passed a lancet into this without reaching the abscess. The hemorrhage at the time was slight, but it continued to bleed, and during the night it became quite profuse. Becoming alarmed, he called upon Prof. Mütter early in the morning, who, observing fluctuation in the gum under the lip, passed his lancet into it; this was followed by a profuse discharge of pus and the arrest of the hemorrhage.

In citing these two cases, it is in order to direct attention to the fact that the foramen incisivum, posterior to the superior central incisors, is frequently quite large, and gives passage to an artery of considerable size. Care therefore should be exercised in passing a lancet in this neighborhood, as serious results might flow from division of this artery, or branches of it when considerably enlarged by an engorged condition of the soft parts.

DIFFICULT CASE TO DIAGNOSE.

BY A. J. RODERICK, D.D.S., SIOUX CITY, IOWA.

A young man, about twenty-eight years of age, good constitution, applied to me to have the second superior molar, left side, extracted. I examined the tooth carefully; found no decay; all the others were found free from caries; pressure upon that tooth produced no pain. Striking all the teeth with the handle of an excavator (on that side of the mouth), gave no sign of periostitis. I got some ice-water, applied it first on the incisors, bicuspids, then upon the molars, and found the trouble located in the second molar. This satisfied me that there was exposure of the pulp. I again examined the approximal surfaces of this tooth with fine "*nerve instruments;*" discovered no decay, there being a small tin foil filling on the grinding surface of this tooth. Suspecting this, I applied the rubber dam, and directed a jet of ice-water upon both filling and crown; this gave no pain. I then examined the posterior approximal surface of the first molar and anterior approximal of the dens sapientia; no decay.

With a molar file, I made a separation on both approximal surfaces,

below the margins of the gum; this gave no clue to the trouble; the necks of the teeth were not bare. I tried the state of the saliva with litmus-paper; not acid. I wanted to remove the filling, yet it was very small, and no sensation manifested on applying cold water to it; but the patient objected, and insisted on having the tooth extracted. I protested; explained the value of the tooth; but he insisted on extraction.

Having gone so far in the mystery of the case, and seeing that some one would be the possessor of the tooth,—wanting to see the case through myself,—I extracted it.

The application of cold water in that vicinity, and upon the other teeth, gave no more annoyance; patient expressed himself much relieved. The approximal surfaces of this tooth were perfectly sound; so were the other teeth. The filling was taken out; also a piece of cotton at the bottom of the cavity, which was not large, but deep. From the size of the filling, I had no thought that there was such depth. The pulp was exposed at one of its "*horns.*" Cutting with a file to the pulp cavity, the pulp was found disorganized in the chamber, and a very offensive odor was given off by it. The pulp in the palatine fang was much congested, not dead; buccal fangs apparently healthy. Pain commenced about three or four weeks ago. The filling was good.

Now, why was this sensation on applying cold to approximal surfaces where there was no exposure? Why was there no sensation on its application to the crown? If there had been pain upon pressure, we would have treated it for periostitis, but there *was no periostitis.* If the pulp had been exposed, we would have treated for exposure.

RESETTING TEETH.

BY H. A. PARR, YARMOUTH, N. S.

The following I find copied in our papers from the London *Lancet:*

"An important discovery has just been made in dentistry, that teeth may be extracted and then again replanted. It has been found that in cases of inflammation about the roots of a tooth, the latter may be taken out, scraped and cleaned, reinserted, and made to do duty again. The method of procedure is to remove the diseased tooth, clean out its cavities, filling them up, after cleaning with carbolic acid, with cotton-wool impregnated with the same; next to scrape the fangs, but preserving the mucous membrane about the neck, and, after bathing in a solution of carbolic acid, return to its place. The London *Lancet* says, in speaking of the process: 'Mr. Lyons carried this out in fourteen cases for Mr. Boleman, with success, in the case of bicuspids and molars, no mechanical appliances being used to keep the teeth supported until they had become firm.'"

Had Mr. Lyons confined himself to the incisors and bicuspids, his success in the treatment would look more probable; but when remem-

bering that the bifurcated roots of the molars are dovetailed in the maxillæ in such a firm manner that it requires the most improved mechanical appliance, in the hand of a skillful operator, to remove them without fracturing the alveolar process, and that there are few patients that would or could endure to have a molar tooth put back in its old position, the possibility of successfully replacing them seems exceedingly doubtful. His treatment for inflammation and suppuration with carbolic acid is good; but is nothing new, as it has been in use a number of years. I would like to know how he would proceed if the abscess did not come away with the tooth when extracted, or when the antrum is in a state of inflammation and suppuration. I think that scraping the root and preserving the mucous membrane on the neck of the tooth, assisted by the use of carbolic acid, would never insure a sound tooth. The treatment appears very well on paper, but would be rough in practice. I believe that teeth with alveolar abscess can and have been saved; also that single-rooted teeth can be replaced and made to do duty again; but the replacing of a tooth with two or three roots looks to me incredible. I should not have regarded this matter of sufficient importance to have commented upon, but for the prominence given to it by the London *Lancet.*

WHY DO WE NOT INSERT MORE PIVOT TEETH?

BY GEO. A. MILLS, BROOKLYN, N. Y.

THIS question suggests itself to me from the results so often noticed in the removal of the roots of the front teeth. I am fully aware that no little prejudice exists with both patients and the dentist respecting the exhibition of gold in the mouth, where teeth are much restored in their contour. Now, the coolness with which many advise the extraction of fractured teeth because the gold will show, is painful to think of; far better that it should, until dentists, as a rule, supply much better substitutes than they do. Is this course pursued from a conviction that it is the best that can be adopted? I think not. It is my opinion that it is done to make our practice less burdensome, and with the belief that plate-work will come to our relief. Sad relief to a cultured eye or to acute sensibilities! Does a metallic, rubber, or other base, improve the condition of things? Is it better that the mucous surface of the mouth should be covered with a foreign substance of any description, and the whole expression of the face changed by the removal of roots in the most expressive portion of the mouth? In a large proportion of these cases they can be treated in a manner that will do away with the necessity of extraction and the introduction of plates. If the crowns of these teeth must be sacrificed by prejudice, neg-

lect, and bad dentistry, why not retain the roots, clean, make healthy, and fill the canals as solid as it is possible, giving a firm basis on which to set well-selected and arranged pivot teeth?—giving greater satisfaction than any other substitute arranged on plates of any material. I am well aware that many seeming objections will present themselves on the introduction of this subject; but they are answerable more to bad dentistry than to any other cause. I can refer to a few cases with satisfaction, as a proof of what has been and may be done with intelligence and care. The failures have occurred more from a want of thoroughness than for any other reason. It is true that circumstances will indicate more than one way of procedure; for instance: when the case will not admit of the root being filled with gold because of its weakness, there are materials that prove efficient for a term of years, and give more comfort than plates can do.

SUPERNUMERARY TEETH.

BY SAMUEL J. DICKEY, PHILADELPHIA, PA.

SUPERNUMERARY teeth have been found in various positions in the mouth, but the case now reported is peculiar in having two such teeth in the mesial line of the superior maxilla, crowded between the central incisors. The jaw is large, with a full set of normal teeth, placed in a well-developed arch, measuring $1\frac{15}{16}$ inches antero-posteriorly from the labial surface of the central incisor to a line drawn across from the dental surfaces of the second molars, and $2\frac{1}{2}$ inches on that line, between the buccal surfaces of the second molars. The supernumerary of the right side occupies a normal position in the arch; is of nearly full length, and presents very much the appearance of a lateral incisor; while the one on the left side is crowded out $\frac{1}{16}$ of an inch anteriorly, and is shorter, presenting the appearance of a distorted cuspid.

That the supply of material from dentine and enamel was abundant, is evident in the dense, sound, well-developed teeth, all but one (the right first molar) still occupying the alveolus, and without a filling, at the age of thirty-eight or forty years.

REMOVING AMALGAM FILLINGS.

BY K. J. P., NEW YORK.

AMALGAM fillings frequently require removal. To accomplish this with nicety, overcoming the trouble and uncertainty of carrying mercury to the filling, I simply take a little amalgam and mix it with mercury. This is easily carried to the filling with a pair of tweezers. By previously scraping the surface, the mercury at once penetrates, and the old filling is readily removed.

SUPERNUMERARY INCISOR.

BY J. H. AXTELL, M.D., MT. CLEMENS, MICH.

Mrs. H. brought her son, seven years of age, to my office to have an inferior deciduous tooth extracted.

I observed that the two upper centrals were widely separated, and called her attention to the fact. She said that another tooth would grow in the space. I assured her that that was impossible. To this she replied that "her little girl, three years old, had two teeth grow in that way, and a year after a third came between them."

I doubted the correctness of her observations; but soon after she brought the child to the office to show me, and I then found there were five incisors between the eye teeth. The three centrals were about even size, one exactly in the mesial line, which was a year later than the others in erupting. The child was only twenty months old when this occurred.

RETENTION OF TEMPORARY TEETH.

BY W. D. HOLBROOK, WAUKESHA, WIS.

A young lady, Miss C. J., twenty-five years of age, came under my care recently, whose teeth, on examination, were found to be mostly of the temporary set. A few years ago the two superior central incisors were erupted, and are now of the usual length, fully matured; also the dens sapientiæ on each jaw. The laterals, both superior and inferior, have been shed, but there is no appearance of others in their place. All of the other temporary teeth remain good except the inferior centrals. The second inferior bicuspids are making their appearance (though not through the gum yet) on the inside of the arch. The temporary teeth are all firm in their places, with no appearance of any further eruptions. The lady has a sound, robust constitution; English by birth. This is the most singular case I have seen in a practice of twenty years, and I think it should be placed on record.

LUSUS NATURÆ.

BY D. B. M'LAIN, NEW LISBON, OHIO.

In June last I extracted for Mrs. ——, aged about 45 years, all the remaining roots in the superior maxilla, and inserted a temporary denture. She returned in about two months, having visited Europe in the *interim*, complaining of inflammation in the roof of the mouth. On examination, I saw a hole, about two lines in diameter, with a white centre; found it to be a tooth lying on its side, about one inch in the

rear of where the left lateral incisor should be. I think it is a molar. Its crown is toward the front of the arch, a little elevated, the roots pointing backward. As it was aching some, I tried to extract it, proceeding *very* cautiously, with a pair of bayonet root forceps. I was afraid to apply traction; tried to break up the attachment by very careful but forcible motions. This was found impossible, as all the adjacent parts seemed to move with it. I prescribed palliative treatment, and dismissed the patient. I am always willing to confess ignorance to a brother dentist if I think I can be benefited, but never did so to a patient until in this case. I told her I would submit it to the profession for advice.

REPLACEMENT AND REUNION OF SUPERIOR CENTRAL INCISOR.

BY D. B. M'LAIN, NEW LISBON, OHIO.

In December, 1867, Walter Sims, aged eleven years, came to me with one of his permanent central incisors in his hand, the other being driven out of sight into the maxillary arch. He had fallen against a tree-box, striking his teeth, both being driven up, and one falling out in the snow. I put the tooth in tepid water, drew its mate down to the proper position, sponged out the alveolus, and replaced the tooth. Pressing with my fingers on the inside and outside of the arch, I distinctly felt the fractured parts close with a snap. The teeth being inclined to spring out, I attached them to the other teeth by silk ligatures as firmly as possible. I confined him to the house, and put him on low diet for about three weeks, using a solution of carbolic acid and rose-water as a wash for the gums. The teeth are now, after the lapse of three years, as good as any of the rest in his mouth,—there is not even a difference in color.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY. J. W. WHITE.

Missouri Dental Journal.

Dr. Chase contributes an article to students on "Inflammation of the Antrum:"

"The antrum or maxillary cavity is of considerable size, you know, and extends on its buccal boundaries from the first bicuspid tooth posteriorly to the posterior roots of the third molar. Its floor is a portion of the palate, and its roof the orbit of the eye. Its inner wall forms part also of the nasal cavity, and its outer wall is continuous with the outer alveolar plate of the upper molar and bicuspid teeth. Its only opening is into the nasal cavity, and is a narrow and long one near the top of the maxillary sinus.

"The antrum is lined with mucous membranes of the same character as the nasal passages with which it is continuous, through the opening just spoken of, and which opening is very much reduced in size when this membrane is inflamed and swollen.

"The mucous membrane of the antrum completely lines this cavity, and performs the same functions as the mucous membrane of the nose. Inflammation here is not different in character from that of the nasal membrane, and is often concomitant with it.

"The roots of the molar and bicuspid teeth often penetrate the antral cavity in their growth, their ends of course being covered with their pericementum, and the mucous membrane of the sinus.

"When the teeth thus situated become diseased, they are a prolific source of antral inflammations.

"For instance, the pulp of a tooth dies; it disintegrates in its own cavity; the gases produced from its decomposition or putrefaction, pass through the foramini of the roots and create irritation and inflammation in the surrounding pericemental tissue. These roots penetrate the antrum and set up inflammation in its lining membrane. The first symptom of antral disease is a dull pain in that side of the face, and a dryness of the nostril of the affected side.

"Now, you must know that in health the lining of the antrum assists by its natural secretion of mucus in keeping the nostril moist. So too, when it participates with the *nose* in inflammation produced by a 'cold in the head,' it furnishes its proportion of mucus and watery exudation which is so annoying in acute nasal catarrh.

"The second antral symptom is this increased flow of mucus, which is the second stage of inflammation in mucous membranes everywhere.

"You will be careful, then, to examine the nostril of the affected side, in your diagnosis of this disease, so as to discover whether or not the nostril of one side corresponds in condition with that of the other.

"Now you must not fail to understand that the opening from the antrum into the nostril may become so closed by inflammation and consequent swelling that no fluid can pass through it. In this case, then, the fluid must remain in the antral cavity, as there is no other outlet. If this is really the condition of things, the contents will probably become purulent and there will be considerable pain in the face, redness of the cheek, and more or less swelling of the soft tissues.

"If science is not called to relieve the patient at this stage, then the bones gradually become absorbed, and growing thin, bulge out, either on the buccal or palatine wall, or the orbital. Not unfrequently has the eye been pushed from its socket by this engorgement of the antrum. The osseous wall at last gives way at some point, and the pent-up fluid finds its way through the soft tissues to the surface, forming a fistulous canal and opening at almost any point on the face, even on the under jaw, so as to give rise in some cases to a supposition that one has to do with an alveolar abscess of that bone.

"You must not suppose that this is the most frequent way in which antral inflammations progress and terminate. The antro-nasal opening is not so often closed, and then the muco-purulent secretion passes through the nostril, and is always to be found there in greater or less quantity. The best time to see it is after the patient has been lying down, with the head resting on the unaffected side. This position allows the fluid to run out of the cavity into the nostril.

"In healthy constitutions this state of things may continue for months and even years without any general disturbance of the system, or without exceeding its present bounds. And it is often unappreciated, the patient supposing that he has only a nasal catarrh. This is more likely to be the case when the exudation passes into the posterior nares and drips into the fauces, instead of appearing at the nostrils.

"The exudation in old cases, and repeatedly in bad constitutions, is likely to become very offensive. The stench is sometimes intolerable; these cases are likely to be called ozena.

"In syphilitic, scrofulous, and scorbutic constitutions, antral inflammation is likely to be chronic and of the most offensive character.

"I have already said that acute nasal catarrh is often the companion of antral inflammation; when the latter is dependent on the former, it is likely to cease when the cure of nasal catarrh is effected.

"TREATMENT.

"This must be on general principles. Remedies should always be addressed to the general constitution of the patient, and also to that particular phase in which the constitution may be at the time.

"For acute antral catarrh you may soak the feet in hot water to the knees. Give a night-sweat; hot bricks to the feet and plenty of cold water in the stomach—five or six tumblers full. Blue mass pills of three grains each, at bedtime, and a saline cathartic in the morning, may be useful. But my favorite treatment would be the third attenuation of aconite in the inflammatory stage, for half a day, and, if necessary, followed by mercurius vivus third dec. trit., two grains every hour until better. I have often relieved those cases with one dose of the mercury, and effected a cure in from three to four.

"You should always examine the teeth of the affected side, and very carefully too, for the cause may lie in an *apparently* sound one. Press the tooth, on examination, from side to side; rap upon it with an excavator handle; look between the teeth for a cavity of decay.

"If you find the offending tooth, it will usually respond by pain—a sore feeling more or less extensive. But it may be there will be no pain, only a very considerable looseness of the organ.

"It is surprising how the system comes to tolerate a dead tooth, which is causing a constant exudation of purulent fluid into the antrum for months, so well that no pressure upon the tooth produces pain, and yet it may have produced so much absorption in the surrounding tissues that it is loose enough to be extracted by the fingers. No hesitation should be used in the *extraction* of such a member, which done, there will probably follow a gush of purulent fluid.

"Still, you must not surely expect this to be the case, for there may be no opening from its alveolus to the interior of the antral lining mucous membrane, until you push an instrument through it.

"Now, then, take a crescent drill and explore the bottom of the socket; the bone may need to be drilled away to enlarge the alveolar opening into the antrum, but you may find only soft tissue at the bottom, instead of bony wall. Push through it, and explore the antral cavity.

"Instead of finding an open cavity here, you may find it to be more or less filled with a spongy mass. This is to be torn to pieces in every

direction, if present, so that your cautery may act in all its parts where you introduce it.

"Whether the cavity is thus filled or free,—and it is more likely to be the latter than the former,—you will syringe it out thoroughly; first with warm water, then soap and water. If the opening into the nose is patent, you will find much of the fluid injected escaping in that way. After this cleansing, throw into the cavity ten drops of creasote in an ounce of tepid water. While using the creasote you will protect the mouth from the regurgitation of the fluid through the alveolus; to this end you can pack some cotton or lint closely around the tube of the syringe, and when the latter is withdrawn, but little fluid will follow it.

"To avoid its escaping into the nostrils, let the head be thrown toward the side upon which the extracted tooth was situated. This will bring the opening uppermost, and the cup will not so easily run over.

"Instead of creasote, tincture of iodine or chlorate of zinc may be used, but I prefer creasote. Carbolic acid may be substituted for the latter, as there is but little difference between them.

"A piece of tape should be crowded into the place loosely, to prevent its closing up too soon, which it is not likely to do if you see your patient the following day. You may expect some considerable pain to follow your operations, which will be increased the following day.

"You had better *not* repeat the injections as soon as the following day; there is always danger of over-medication. Wait three or four days and observe the result of what you have already done. It may not even be necessary to give the cavity a second cauterizing injection.

"I have already said that attention should be paid to the general system, and your remedies must collerate with the present dyscrasia of the constitution, whether it be syphilitic, scrofulous, anæmic. This paper would be unduly lengthened were I to particularize in regard to these conditions.

"A wholesome and generous diet, however, is never at variance with purulent formations in the antrum.

"Let us now suppose a difficult condition of things. For instance, there is no diseased tooth which causes this disturbance! There is no decayed tooth on this side of the upper maxilla! What then? Shall we extract a sound tooth for the purpose of reaching the antral cavity? By no means; sound teeth are not thus to be sacrificed, notwithstanding the authority of surgical authors.

"We can very readily penetrate the antrum through the thin wall above the roots of the second bicuspid tooth, or above those of the first molar. Take a strong gum lancet and make a V-shaped cut through the soft tissues in the place designated—the point of the V pointing downward; then with a trocar or dental drill of large size, bore through the bone. You will find it not very thick—only from an eighth to the thirty-second part of an inch in thickness. Here you can institute your treatment as already directed, being careful to keep the opening patulous, by the use of a strip of tape. I recommend the use of tape instead of lint or cotton-wool, for the reason that there is less danger of its getting lost in the antrum,—such things have happened, and are not pleasant, as they complicate the case sometimes.

"If tape should be lost, it can easily be withdrawn by getting hold

of one end with an excavator or tweezers. A lint of cotton or wool might be only withdrawn piecemeal, as it readily separates.

"When this disease has been produced by foreign bodies in the cavity, as a dead root which has been forced into it in the operation of extraction, then the socket through which it was drawn is to be enlarged at the bottom with a large drill or burr, and exploration made from this point.

"Don't be afraid of making too large an opening; there is no danger but what nature will supply with new bone as large a cavity as you choose to make. One large enough for the root to make its own exit from, easily, is the best."

Dental Register.

Dr. Taft writes upon "Consequences of Decay of the Teeth," from which we make the following extract:

"The keen, sharp pain resulting from a highly inflamed tooth pulp has scarcely an equal by that presented in any other organ or tissue of the body. All this will result from active inflammation of the pulp, and from this acute state it may pass to one of a chronic character, and so for a long time be persistently annoying to the patient. There may be from it in this condition a discharge of pus, or it may assume a hypertrophied condition, enlarging so as to protrude through the orifice of exposure into the decayed cavity; and to such an extent does this sometimes occur that a large cavity of decay is filled with the fungus, and even protruding from it. And when this tissue becomes devitalized, the end is not yet, so far as pain and suffering is concerned; for very frequently following closely upon the heels of this devitalization, disease of the periosteum—the investing membrane of the root of the tooth—occurs, with a whole train of afflictions, pains, and agonies, that refuse to be conquered until the entire removal of the offending organ is effected. Inflammation, suppuration, and the total disorganization of the periosteum, are frequent results in the train that follows decay of the teeth. In this ruin is too often involved the affection, disease, and death of the contiguous parts, both the soft and hard. Very often indeed do the gums and mucous membrane become involved, and that in a great variety of phases: from that of simple irritation and inflammation to a breaking down and a wasting away of the tissue, to the extent of its entire removal from the roots of the teeth; and from the occurrence of the most simple benign tumor to that of the most malignant carcinomatous character, which, when definitely developed, usually proves speedily fatal. Not less striking and fearful are the effects upon the bony parts, causing solution and wasting away, or death and exfoliation, or the production of bony tumors of both malignant and non-malignant character, the results of which will be quite as serious as though in the soft parts, and perhaps more difficult to eradicate.

"The transfer of affections from the roots and sockets of the teeth to the antrum is a matter fraught with very grave interest, both to the one who has it and to him who treats it. Affections of this cavity are often, even when arising from very simple causes, exceedingly difficult to control and cure. It sometimes involves the surrounding parts to such an extent as to occasion the most disastrous results; and especially is this

the case when the disease assumes the form of tumor, and especially if it be malignant. But even the simple forms of disease of this cavity, such as inflammation and suppuration of, or prurient discharge from, its lining membrane, will be found frequently to be of a most persistent character, not yielding easily to either local or systemic treatment. In this connection the occurrence of malignant growths is a condition most disastrous; this it is probable, however, only occurs when there is a systemic predisposition. The benign and malignant affections of the soft and hard parts are liable to occur either more or less remotely as a consequence of decayed teeth."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

(Continued from page 22.)

Dr. Hills said the file was one of the most valuable instruments in his practice, and he used it freely; he did not wish to be understood by this as favoring the indiscriminate use of it; in the hands of an indifferent operator it might be made one of the most destructive instruments used in dentistry. In cases of filing that had come under his observation from fellow-practitioners, the failures were due, in the majority of them, to the imperfect manner in which the filed surfaces were polished. When the file is used in separating the teeth, the surfaces should be thoroughly polished, and if this is not done, the operation cannot be expected to succeed.

Dr. W. H. Trueman spoke of the difficulty of keeping polished steel instruments free from rust in discoloration, especially in summer, when the windows are almost constantly open. Had tried a number of suggestions to overcome the difficulty, but was satisfied with none. Plating is the most effective, but too expensive for instruments which are constantly wearing out, such as excavators, burrs, drills, etc., the very instruments, on account of their number and constant exposure to moisture, giving us the most trouble. Had tried various kinds of bronzing and varnish; but in a short time they wear off, and leave the instrument unsightly, and can be used only on the unpolished, or handle, portion of the instrument. The best of this class, black asphaltum varnish, applied quite thick, and the instrument exposed to about 300° Fahr. in an oven for an hour or two, will last a long time, clings to the steel with great tenacity, neither chips nor cracks, and does not feel *sticky* when in use.

A piece of chamois-skin, slightly greased with tallow and perfumed

with a few drops of ottar of rose, used to *wipe off* at night each instrument used during the day, without adding much to the labor of putting them up, or imparting any greasiness to be felt, or sufficient to soil the hands, will do much to preserve them bright and clean. Tallow seemed more effective than oil,—probably from having more body,—and is less unpleasant to taste and smell; when used carefully in this way, is imperceptible to either.

Dr. Tees had found a great deal of trouble in making retaining-points in cavities on the distal and mesial surfaces of the teeth with the ordinary drill, as there was great liability to chip or cut the enamel at the edges of the cavity with the sharp corners of the drill, thus sometimes causing great loss of tooth structure, as the tooth had to be rechiseled to get perfect edges. To obviate this, he had had some drills made with the same points (he preferred the spear shape), but constricted at the necks, and made round. He used Dr. Ellis' plugging-points a great deal; in many of his pluggers he preferred two rows of fine serrations.

Dr. Eisenbrey thinks that if teeth could speak in behalf of their own salvation they would say: Chisel me, and file me, and do it freely. Mechanical principles and experience will convince any one that is open to conviction. The argument is advanced that nature does not place them in the condition that the file and chisel leaves them; true, but what does that signify, if time reproves Nature for her arrangement of the teeth by breaking them down, is it meet that we should restore them to the same condition? Pockets are very fine, but not about teeth; and in that respect we can improve on nature. It is true that hands (toothpicks) may very easily be put in the pockets to clean them, but it is not done; hence it behooves us to put them in a condition in which they will best stand the neglect to which they are subjected, and to do so, file and chisel.

The instruments he uses are hatchets and chisels,—a variety of sizes, and bent from a right angle to nearly straight; the chisels act then both as hoes and chisels. He does not believe in drilling retaining-points, but would have a groove cut in the side of the cavity, directly opposite, to support the filling; they are more easily filled, and better when done, and then the cavity may be conical if deep, and spoon-shaped if shallow, and still the operation be reliable. Retaining-pits are generally drilled in the very weakest point in the whole tooth, and that is in the cervical wall, which is just the place that should not be touched after the decayed dentine is removed, but left square and solid to butt a filling against. He would always make room for filling with a chisel in preference to separating in any *manner* with any *kind* of wedges or rubber, and when it is done, will not let the surfaces touch each other again when filled.

Dr. Breen did not like the file, and never used it unless compelled to do so. He used pluggers such as Dr. Tees had described.

Prof. Stellwagen. For use on steel instruments, take fine olive oil, that had been clarified by standing for a few weeks in a bottle about one-fourth full of common leaden shot. The impurities settle to the bottom, mingling with the lead, leaving the liquid above clean and pure, and incapable of rusting the steel, as the oil would before it has been thus purified.

Dr. Hills had found it difficult to drill on the crowns and distal surfaces of the molars with a straight drill, and had made a modification of the bow drill that obviated this trouble.

Prof. McQuillen had observed that his instruments only rusted when the windows, in the close proximity to the operating-case, were carelessly left open, at night, by the servant. Although the shutters were closed, the humidity of the atmosphere at night, particularly in damp weather, would invariably affect the instruments. By keeping the windows closed and carefully wiping the instruments when done with them, he had no cause of complaint. One of the best ways to keep instruments from rusting was to have them in constant use. His excavators and pluggers were always bright on account of that, but his forceps were very liable to get rusty from want of use, and he therefore had them nickel-plated.

A meeting of the society was held at the Philadelphia Dental College, Wednesday evening, December 7th, the President in the chair.

Dr. M. Lukens Long exhibited a most interesting and remarkable specimen of hypertrophy of the roots of the left superior first molar, forwarded by S. H. Whitmer, of Newport, Perry Co., Penn., with the statement that it had been extracted by him from a laborer about twenty-seven years of age. The specimen measures 2 inches in length by $2\frac{5}{8}$ inches in circumference, and weighs $12\frac{1}{2}$ pennyweights. In extracting this formidable mass, after having made an unsuccessful attempt, the operator found it necessary to dissect off the gum on the palatal and buccal sides, and to cut away the alveolus with a chisel. The hypertrophied mass had evidently occupied a considerable portion of the antrum of the left side. The specimen was placed in the hands of Prof. McQuillen for microscopical examination.

Harrison Allen, M.D., Professor of Anatomy and Surgery in the Philadelphia Dental College, then delivered an interesting lecture on "Laryngoscopy and Auroscopy," illustrating it by a number of specimens, and exhibiting an improved apparatus for the injection of the vapors of different salts into the Eustachian tube.

A meeting of the society was held Wednesday, January 4th, 1871, the President in the chair.

G. W. Matteson, M.D., of Middleville, Barry County, Michigan, contributed to the museum three rare and interesting specimens of "Calcification of the Pulp," accompanied by the following communication:

I have noticed in the DENTAL COSMOS and other journals reports of the calcification of the pulps of teeth, and always described as having caused the patient extreme pain. I have here three specimens which I am happy to contribute to the Odontographic Society. Some eight years since I extracted for a patient what seemed to be a sound tooth, though it caused much pain and trouble. There was evidence of periodental inflammation at the apex of the fang (a bicuspid of the left upper maxilla), and upon splitting the tooth I found calcification of the dental pulp. One day last summer (the precise date not recorded) I was extracting some teeth for a lady, preparatory to the insertion of a new set, and among them was a left superior molar, presenting little appearance of decay, and which had never ached; yet the gum and process had receded so that it was quite loose, and I therefore removed it. After extracting, I broke it through the centre, and found there was calcification of the pulp. It is specimen marked No. 1.

Specimen No. 2 was a left superior first molar. Patient, a clergyman. This tooth was extracted November 27th, 1869. About three weeks before I had filled a small cavity in it, as you will see. The tooth had ached some before it was filled, though it did not appear very sensitive during the preparation of the cavity. It remained quiet for about a week, when the patient came into my office saying his tooth was causing him much pain.

I gave it a careful examination, pronounced it a case of periodontitis, and treated it accordingly with tincture of aconite root and iodine, which gave relief for a time, but nothing permanent. Finally I removed the filling, thinking perhaps there might be pressure upon some sensitive point; but that afforded no relief.

There was no tenderness in any part of the cavity; the patient only complained of soreness when pressure was made upon the gums. Lastly, when all hope of relieving the pain and saving the tooth had been exhausted, I removed it, and soon after my patient was quite free from pain and able to return to his study. In this case treatment was continued through several days.

My diagnosis was correct. Periodontitis had gone on to suppuration about the apex of the fangs, and necrosis, at that point, had already commenced, as you will see on close examination.

The same day that I removed the above-mentioned tooth (November 27th, 1869), a middle-aged farm laborer came into my office and asked

me to extract a tooth for him. He took the chair and showed me which one ached. It was the left superior second molar. I examined the tooth, and found no apparent cause why it should trouble him, except that, on rapping lightly upon the crown of the tooth, he said it hurt and was sore. My diagnosis in this case was periodontitis; and the patient residing some miles out of town, could not be subjected to a course of treatment, and insisted upon having the tooth extracted. I proceeded at once to comply with his request, at the same time satisfying myself that my diagnosis was correct; pus having formed about the apex of the fangs. An examination of the tooth shows a beautiful specimen of calcification of the dental pulp. Specimen marked No. 3.

What, now, are we to assign as the cause of trouble in three of the four cases mentioned, when the one case (specimen No. 1) had neither inflammation nor pain at any time? A few words will explain the conclusions to which I have arrived, although I may be far from correct. The idea of calcification of the pulp of a tooth, so far as my reading and memory serve me, has been associated with extreme pain during the process of calcification; but a careful examination and consideration of the cases before me, lead to the conclusion that calcification of the entire pulp of a tooth is not accompanied by any pain whatever; but that calcification of the bulbous part of the pulp only, as in two of the specimens here presented, and also in the first one mentioned, which I have not sent, leaves that portion of pulp occupying the canal between the bulbous portion of the pulp cavity and the apex of the fang in a condition that must sooner or later induce disorganization and putridity, and thus become a source of irritation and inflammation in the parts most intimately connected with it; hence, in such cases, we have periodontitis and extreme pain as a result of calcification of the pulp of a tooth. In specimen No. 1 you will observe that calcification was complete throughout the entire length of the pulp cavity; no portion left to become disorganized and putrid; no inflammation nor pain ensued. The tooth had never ached nor given the patient any uneasiness that she could recollect; and the calcification is more perfect in this than either of the other specimens.

Prof. McQuillen exhibited a section of nodular calcification of the pulp under the microscope, prepared by Dr. George S. Allan, of New York, showing the irregular manner in which the dentinal tubuli pass in such structures. The specimens which he had the pleasure of exhibiting to the members through the courtesy of Dr. Matteson, were the most valuable of the kind he had ever seen.

With respect to the opinions advanced by the gentleman in his communication, he would state that in his experience there had always been pain attendant upon calcified pulps of the teeth. Whether this was due

to the changing condition in the calcification of the pulp, or to the result following it, was a point he would not pretend to positively decide upon. He had, however, been disposed to regard the pain as due to the same influence as that which causes facial neuralgia,—*i.e.* compression of the branches or terminal filaments of the fifth pair of nerves; for instance, periosteal thickening, or osteal deposit of the foramen rotundum, or foramen ovale, through which the second and third branches of the fifth pair of nerves pass out of the cavity of the cranium, by compressing these nerves, becomes a prolific cause of facial neuralgia. So in calcification of the pulp, it is reasonable to infer that the terminal filaments of the fifth pair, distributed to that organ, might be compressed between the walls of the pulp cavity and the calcified pulp. The engorged condition of the pulp, however, due to irritation caused by the presence of nodules of secondary dentine, would, of course, be likely to cause intense pain.

Dr. W. H. Trueman called attention to a very simple and inexpensive arrangement to act as a safety-valve for vulcanizers. A hole, $\frac{3}{8}$ of an inch in diameter, is drilled through the head of the vulcanizer in any convenient position, and is closed up by soft-soldering on the inside a copper disk, not thicker than an ordinary silver lower plate, overlaying at the edges about $\frac{1}{16}$ of an inch.

This arrangement he had repeatedly tested during the last eight or ten months, by running steam up in the vulcanizer until the copper disk gave way, and had found it perfectly reliable. The copper was first soldered on the outside; but the hardest solder manageable with the soldering-iron would not stand a continued pressure of more than 310° or 320°. When soldered on the inside, although increasing the thickness of the copper enabled it to sustain a greater pressure, the soldering always gave way, and with the same piece of copper at very nearly the same temperature, allowing the steam to gradually escape.

BROOKLYN DENTAL SOCIETY.

The society met at Dr. W. H. Atkinson's house, 41 East Ninth Street, New York, Monday evening, November 14th, 1870, at half-past seven.

Under the head of "Miscellanies," Dr. Atkinson, at the request of several members, gave a brief description of the two cases which were presented for the clinic at the Brooklyn Dental Infirmary on Saturday, Oct. 29th; one of which was noticed in the last number of the Dental Cosmos, and the other will probably appear soon, with a brief history of the case and the course of treatment pursued.

Dr. J. S. Latimer. In cases of exposed pulps, I generally use creasote pretty thoroughly for two or three days, filling the cavity loosely with cotton, and then before filling with the os-artificiel, I always take a small piece of tin foil, cutting it so as to fit easily to the bottom of the cavity, put on it the least bit of thick sandarac varnish, and placing it in the bottom of the cavity, with the varnished side next to the pulp, I gently pat it down to its place with an appropriate instrument.

The tin foil being very pliable and easily adjusted, together with the varnish which spreads out over the bottom of the cavity, completely covers it and prevents irritation of the pulp when the os-artificiel is applied. I find the amount of pain very much lessened by this method, and the operation thereby rendered the more pleasant to the patient. I do not usually fill the cavity entirely with the os-artificiel, but only partially so, filling the remainder of the cavity with Bevin's stopping. I prefer this material, because in case of trouble it is more easily removed than the other. I always wait a few days to see if all goes right before performing the permanent operation.

I have formerly expressed myself as almost discouraged with regard to bleaching teeth; but I have had reason to change that opinion within a short time. A few days ago I saw a tooth I had bleached three years ago, and the color was decidedly good; also another case of a lady for whom I bleached a tooth and filled it temporarily; one week after she came back with it nearly as much discolored as at first. I bleached and filled it again, this time permanently; it has been two years since it was done. I saw it a short time ago, and the color was excellent. I speak of this because it has been an encouragement to me, and I judged it would be a matter of interest to my professional brethren.

Dr. Mills read a paper on the "Insertion of Pivot Teeth."*

The regular subject of discussion was now taken up, viz.: "Cause and Treatment of Caries of the Teeth."

Dr. A. H. Brockway. This is a subject which embraces nearly the whole field of our profession, if it is thoroughly discussed, and I feel that it is one that calls for our best thought and judgment.

A few years ago the dentist would consider his duty performed by filling such cavities as could be filled without too much expenditure of time and material, getting over the difficulty of very large operations, and ridding himself of diseased teeth by extraction. The day for such treatment has passed by, and in the light of the present time the conscientious practitioner will have demands upon his intelligence and skill that will tax his resources to the utmost, and his treatment of different cases will be exceedingly varied, his aim being to retain all the

* See page 72.

teeth possible, and often the roots of teeth, when it is important to preserve the contour of the face, as well as for the purposes of mastication.

We are not all clear as to the cause of caries. In general terms it may be stated as being produced by some agent favoring the removal of the mineral portion of the teeth. The treatment is so extremely varied, that we could better describe it if we had a case in hand. The carious portion, however, must be removed, and in its place some material substituted that will resist mastication and restore the lost portion. Then arises the question as to what we shall use. It has been pretty generally decided that gold is the best material to use, and yet I think there are many exceptions to that rule. It seems to me that any dentist who uses only gold must do some injustice to his patients. To obtain success in gold, it must be used thoroughly, the cavity must be easily get-at-able, and the tooth kept perfectly dry during the operation. Another consideration to be taken into account is the strength of the tooth structure, which must be sufficient, or the tooth will give way, and failure result. My judgment is that many cases are better treated by some plastic filling than with gold. I think the object of the dentist should be, not so much to see what he can do as to subserve the interests of his patients, and the uses to which the teeth will be subjected. There are many cases coming under my care which I treat with other materials than gold.

I wish enlightenment concerning caries which attack the labial surfaces of central and lateral incisors near the margin of the gums, extending often so as almost to completely girdle the tooth. I have such a case in hand at present.

Dr. Jarvie. In the treatment of caries, I think we should take into consideration the fact that the teeth differ very materially from the other bones of the body, inasmuch as the lost parts are not replaced by nature as they are in the bones. In many cases, especially on the approximal surfaces of teeth, decay can be removed by filing between them when it is superficial; but when it extends through the enamel, we must use some material to restore the lost portions of the tooth structure. I think gold is preferable by far in the majority of cases. After filling a tooth the question is often asked by patients, "Is that tooth likely to decay again?" and we have to answer the question the best we can.

The place where fillings most always fail first, is at the cervical portion of the tooth, owing to various circumstances: that part of the cavity is the most difficult to thoroughly prepare and fill, and there is a liability of leaving an excess of the filling, especially where the cavity extends under the margin of the gum ; then there is a tendency for the food to lodge between the teeth, and when left there by the

negligence of the patient, the tooth is exposed to the destructive agencies engendered by the decomposition of the matter crowded into the spaces. I have often taken out the remaining portions of tin fillings which have worn down very much, and have been surprised at the good condition of the tooth structure underneath, finding it sound and firm. I think it can often be used under circumstances which would cause a failure if we were to attempt to use gold. The tin foil being very soft, packs closely against the walls and prevents leakage. In children's teeth tin is often the best material to use, on account of the difficulty we have in controlling the restlessness of the little patients.

Dr. J. S. Latimer. In such cases as Dr. Brockway has referred to, where caries has attacked the labio-cervical portions of the tooth, the great trouble is that the dentine is so exceedingly sensitive that we cannot prepare the cavity as thoroughly as is demanded, and the probability is that even after we have done the best we can, decay will commence again. In treating such cases as these, I advise the use of prepared chalk, lime-water, floss-silk, and brushes. When I have finished putting the teeth in order, I say to my patients, "I have done my part, and have told you how to manage your part. You can, if faithful, prevent the recurrence of decay: brush your teeth thoroughly three times a day, and use a good tooth-powder."

Here is a case in point. A lady, sixteen years ago, had her teeth filled by a dentist of this city. He put in many amalgam fillings, and but few gold ones. He gave her thorough instructions about keeping her teeth clean, and dismissed her. Her teeth have not been examined during these sixteen years. She came into my hands a few days ago; but after a most careful examination, I found nothing to do. Her faithfulness had accomplished its perfect work. Her health during this term of years had been moderately good. I speak of this for the encouragement of us all.

Drs. Brockway, Cook, and Mirick commented upon, and approved of, the teachings of the late Dr. Arthur, of Philadelphia, concerning the removal of decay by filing, especially on approximal surfaces, and afterward polishing thoroughly.

Dr. Mermier said he was a living witness of the excellence of just such treatment, as he had his two superior central incisors treated in that manner over twenty years ago, and they are now free from decay.

Dr. Bogue. I rise to dissent from all this last teaching to which we have listened, as I cannot accept it fully. It seems to me that to have the teeth separated in this manner by filing, and the natural covering taken off, is not right. We hardly need any argument to prove that at the time such practice was taught by Dr. Arthur the least expenditure of time and trouble was the doctrine among dentists. The theory of

decay was not so well understood in those days as now; neither was thorough cleaning of the teeth nearly as much insisted upon by the dentists as at present.

I do not think the Creator makes any mistakes with reference to the shape or structure of the teeth. The enamel is the natural covering of the exposed portion or crown of the tooth. To ruthlessly remove this by filing, and also spoil the shape of the teeth, I wholly dissent from. Where decay has not gone through the enamel, it may be well enough. I think that faithful care, and not the health of the patient, is the principal thing in the preservation of the teeth.

To illustrate this, I will relate concerning one case of a young lady who was last under my care about three weeks ago. I had filled quite a number of cavities for her in 1863. Two of the incisors, central and lateral, were pulpless and discolored. I bleached them and filled them by hand-pressure. During the time she spent at my office she got such a drilling in the doctrine of taking care of the teeth that it followed her from that time to this. Her teeth were frail then, even now they are frail; her health has been poor during these years, and yet under these adverse circumstances I found only two fillings that needed removing. Such a result as this is due alone to her persistent care. She told me that she had hardly ever failed during the seven years to brush her teeth immediately after finishing her meals.

Had I in that case adopted the practice of filing the teeth apart, the natural appearance of the teeth would have been sacrificed, and the comfort of the patient decidedly interfered with. The teeth, especially the bicuspids and molars, are naturally arranged so that there is very little space between them,—the object being that no food should be crowded between the teeth. If I had separated them by the file, and destroyed this unity and left spaces, some of which would have been of a V-shape, the food in mastication would have been crowded down between the teeth, irritating the gums, and seriously interfering with the order of nature.

Again, the flat surfaces between the teeth, left after the use of the file, cannot be so readily cleaned by the brush as the naturally-rounded surfaces of the teeth as we find them in their proper development.

Dr. Mills. If I were asked what I would do for the treatment of caries, and I could resort to but one method, I would say, treat with *extreme cleanliness*, which, in my opinion, if it was faithfully followed, would do more to arrest the progress of caries than anything else we could do with all the other methods we have to adopt. No one thing, in my opinion, is of more vital importance than healthy and clean teeth. Then let us as much as possible proclaim with earnestness that cleanliness is the best treatment for dental caries. It has often been re-

ferred to in the meetings of dentists, that we ought to put before the public some intelligent instructions in the way of a book. In this direction Dr. Lyon has commenced the distribution of just that kind of teaching that the masses need. The title of the book is, "The Teeth, and how to take care of them."

JOHN C. WYMAN, *Reporter*.

SOUTH CAROLINA STATE DENTAL ASSOCIATION.

THIS Association held its semi-annual meeting in Charleston on the evening of the 1st November, 1870, and continued its session through the remainder of the week.

The profession was well represented from the various parts of the State, and a number of letters of application for membership were received.

Dr. Theodore Chupein read an essay on "Alveolar Abscess," which was followed by a discussion on the filling of the roots of teeth with various materials.

Resolutions were adopted for the proper entertainment by this association of the Southern Dental Association, to meet in Charleston, in April next.

By request of the managers of the South Carolina Institute Fair, the President appointed committees to examine the specimens of mechanical dentistry and of dental instruments on exhibition there.

On motion of Dr. Chupein, a committee of three was appointed by the Chair to examine and report on the dental instruments and materials offered by Samuel S. White.*

Dr. B. A. Rodrigues read an essay on "Secondary Hemorrhage in Minor Surgery." A discussion followed, in which many interesting cases were related by the members present.

The subject of the propriety of exhibiting specimens of mechanical dentistry at fairs was brought up and thoroughly discussed.

An essay on "the Oral Secretions" was delivered by G. H. Winkler, D.D.S.

By resolution, the Corresponding Secretary was instructed to open communication with the associations of Georgia and North Carolina in reference to a proposition to unite the three associations in one body.

Interesting clinics were held by Drs. Patrick and Chupein.

The discussions were animated and profitable, and were participated

* See first page of advertisements.

in by the members generally, as well as by visitors and physicians who had been invited to be present.

THOS. T. MOORE, *Corresponding Secretary.*

CHARLESTON DENTAL ASSOCIATION.

AT the anniversary meeting of this association, held on the 20th December, 1870, the following officers were elected to serve for the ensuing year:

President.—Theodore F. Chupein, *vice* W. S. Bunn, who declined promotion.

Vice-President.—George K. Winkler.

Secretary and Treasurer.—B. A. Muckenfuss.

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

DOUBLE HARELIP.

THE case now before the class (a man thirty years of age) is that physical imperfection known as harelip. In this particular instance it differs, however, markedly from others which it has come in my way to treat before you, in being a compound or double cleft.

In the usual harelip, as all here well know, the deficiency consists in a V-break in the continuity of the parts. (*Vide* DENTAL COSMOS, Clinical Notes, August, 1870.) The double break varies as markedly as the first is true to a type. The case before us is a fair example of what you will meet with in this direction of practice,—it is not a complicated case; neither is it a simple one. First, you observe a break involving one-half—or much more nearly two-thirds—of the superior lip, —an example of what is meant by deficient development. That Nature, however, attempted, but was thwarted in her work of making here a perfect lip, is evidenced in that we find hanging from the septum of the nostrils a misshapen, fleshy mass, the abortion, without doubt, of the lacking portion of the lip. This centre teat or part, in these cases, is the *pons asinorum*, and it is so various, so diversified in its relations to adjacent parts, that the question of concern in all such operations is, What shall we do with it? Here in the case before us, for example, is this teat, so outside the harmonious line of the lip that a strip

which should rest upon the cutaneous surface of either side would pass beneath the mucous face of this middle piece.

As another example, I will here introduce a second patient; this infant, but three weeks of age. You have seldom seen anything more curious looking,—it seems to have a fleshy door-knob hanging from the tip of its nose. The child has scarcely the remnant of an upper lip, and what is a great deal worse, there is a complete break both through the hard and soft palate, rendering the nares and mouth a common cavity; and this cavity has neither anterior nor posterior closure, being thus, of course, always open. The babe cannot suckle; and when milk is poured into this cavity, attempt at deglutition throws about as much back as gets down the œsophagus. Observe this case particularly, and compare it with the first, since it enables me very well to show you the two extremes of complicated harelips. The pedunculated prominence hanging from the nose of this child is the rudimentary lip,—and who shall say how much of the absent palate enters into its composition? All the inside of the tumor is made up of bone; this the knife will be sure to demonstrate to us. The condition of this child is lamentable, and I shall exert myself to the utmost, you may be sure, for its relief.

In the mean time, until we come to the operation, consider it, each one of you, your own patient, and devise in your mind what kind of an operation you conceive best adapted to meet the requirements of the case.

From an operative standpoint we divide the subject of double harelip into two classes, simple and complicated. Such a division answers our purpose very well. Let me thus, for a single moment, refer to an uncomplicated double harelip, where the centre piece or teat might be found so large and square as nearly to divide the lip into three portions; now here the mesian line of the lip would be found in the centre piece; it would therefore, I think, suggest itself to any one that either side of the cleft was to be treated as a separate harelip,—that is, the whole operation may be very well done at one sitting, but there would necessarily be symmetrical parings made of either cleft. In such a case we have also to take into account the concavity made on either of the sides of our fissure, as reference is had to the influence exerted on the free margin of the lip; for here, of course, we require no swell.

Whether, again, in these really double cases, we would first operate on the one side, and when this was cured, on the other, is a matter for the judgment of the operator. Many surgeons prefer to correct the whole deformity at one sitting. If he should do this, the operation would only deviate from the principles laid down, as regard would be had to the approximation of the parts. If the centre piece were

small, I think it would be found the most satisfactory practice to pass the pins directly from one lateral flap to the other, on through the central teat, thus uniting all these parts together by a common suture. If, on the contrary, the centre piece is broad and well covered by skin, I think the greatest good is found in using two sets of ligatures.

As regards the single or double operation, I myself am influenced by the width of the middle piece, the tenseness or laxity of the tissue of the lip, and the endurance and condition of the patient.

Another modification of the double harelip is one in which there is projection into the cleft of the incisor teeth, the alveolar process being sufficiently normal to allow of non-interference with it. The projection of the teeth is a natural result of the lack of external support from the labial deficiency; the tongue has actually pushed them outwardly. This explanation will, I am sure, seem strange only to those who are unacquainted with the exceeding mobility of the dental organs under slight but continued force. It is certainly the true cause of such projection. In a case of this kind, the preliminary operation is the removal of the teeth. If, now, six months are allowed to intervene before attempting the operation on the lip, the alveoli of the extracted teeth will be found to have receded, through absorption, quite the eighth of an inch. The second operation is then to be done *secundum artem.* This waiting on the process of absorption will be found to conduce greatly to a successful result; but it is not a necessity.

A still better, though more tedious, mode of correcting such a deformity, is by bringing the projecting teeth back to their normal place in the arch through the agency of elastic ligatures, which is a perfectly feasible operation, and not at all difficult of performance. By such a preliminary procedure we not only get the teeth out of the way, but we also save to the patient these valuable organs. To make and apply such a ligature, we have only to take a common slip of india-rubber, attach at either end a loop of silk, place the loops over certain of the molar teeth (it is immaterial which), and stretch the centre or rubber part over the labial faces of the teeth to be pulled back. It is astonishing how quickly and powerfully such a force will act upon the teeth, and in two or three weeks at most, they will be brought into proper line. To secure them *in situ*, and prevent their being again pushed forward, we have only to keep them ligatured in any convenient manner until the operation on the lip is made.

Cleft of the lip, as seen in the case of the babe before us, is found in almost every case of cleft of the hard palate.

It has always been deemed very important in these cases that an operation on the lip should be performed as early as possible, since it is thought to favor closure of the bony cleft. In these cases the opera-

tion differs from that suited to an ordinary one only where there is a projection of one or both alveolar processes into the break. In such instances, if the projection is very marked—that is, so much as to prevent the bringing of the lips together over them—we may, perhaps, be able to do nothing better than to cut away the parts. This, however, is always to be avoided when possible: first, because we thus destroy the germs of the teeth; and secondly, because if by any means we can get union of the lip, the parts in their development will come mutually to accommodate each other. In such cases, some authors recommend that we endeavor to bend back these juttings of bone, turning them in toward the mesial line, and when this can be done it answers a very admirable purpose.

Still another mode consists in the employment of the fronto-occipito-labial elastic sling, which pulls upon the projecting process backward from the occiput. It will certainly fulfill the indications, but its application is not unattended with trouble.

In cases of double harelip, when the centre slip is so associated with the septum of the nose as to make the parts appear as one, as in the babe before us, we might describe it as a hypertrophied state of the septum, were it not for the loss of material in the lip. Again, the lost part from the lip is sometimes found attached to the very tip of the nose, giving to the patient the appearance of laboring under lipoma.

These variations, together with all the anomalies in this direction, are first to be studied, as regards their cure, from the artistic standpoint. The surgeon knows where and what he can afford to cut; he knows what nature will do in the case; it only remains for him to consider well his incisions,—where he shall make them, and what is to be the result, before the operation is attempted.

With this general review of the subject, which will, I trust, be found by you sufficiently full for a satisfactory guidance in this direction of practice, we may turn to the performance of the operation upon these cases.

First, the man. It is sad that he has been allowed to go to adult age with such a deformity. As this central piece is not wide, we can utilize it, and make a single operation suffice for both clefts; that is, we shall pare both edges of this central piece, then the edges of the lip upon either side, and passing long pins directly from the lateral flaps through this teat, bring all four raw surfaces into their proper position by one ligature thrown around the pins. In regard to the character of our incisions, it is not here so necessary to use the ellipse, or double V parings, which I spoke of when upon the subject of simple harelip, since we do not here produce in the same way the central median prominence and swell, and our great object is, therefore, rather to produce

perfectly fresh surfaces at every point, that union may be rapid and complete.

[Operation performed as described, the teat being used to fill up the gap between the two flaps, and a portion of one of the parings being allowed to remain in order to add to the fullness of the free margin, somewhat after the manner of the operation of Mirault. But two pins were used, and adhesive strips were immediately applied to assist in the support.—De F. W.]

In regard to this little infant, I trust you have all by this time decided as to the operation which you would perform were the case in your care. The child is but three weeks old, yet in these cases of such terrible deformity the operation must be done early, since the compression effected even by the closure of the soft parts may at this tender age greatly influence also the bony cleft; for you well know the large proportion of animal matter which exists in the bones of young children, and the ease with which they may be bent. At some future clinic I shall dwell more fully upon the matter of cleft palate, and will not therefore now detain you.

As you look at this curious projection from the nose you will readily see that it cannot be utilized, and it must therefore be removed. This I shall do with a simple pair of bone-nippers, cutting it from the septum nasi, and, as you will then see, we will have to deal but with a simple cleft, the break, however, being very wide; yet I think there will be no excessive tension exerted upon the parts.

[The protuberance was then removed, the parts pared and drawn together as in ordinary cases, and long strips of adhesive plaster added. Hemorrhage was but slight. The mass consisted of bone and cartilage. The parts united well, and the child made a good recovery.—De F. W.]

OBITUARY.

DR. CHRISTOPHER STARR BREWSTER.

This gentleman, whose name is well known to the older members of the profession as dentist to Louis Philippe and other European sovereigns, died at Versailles, December 15, 1870, of ramollissement, in the seventy-first year of his age.

He was born in New England, and commenced his career as a professional man in Charlestown, where he is said to have had a large practice for the place. The field of operation, however, was too limited for him, and he sought and won a large fortune and extended reputation

in Europe. Visiting London, he made overtures for an alliance to several prominent members of the profession there; failing in that, he determined to make Paris his home, and locating himself at 15 Rue de la Paix, soon established a large practice, patients coming to him from all parts of Europe, many of them being members of the royal families and the nobility. His practice was largely remunerative, and afforded him a princely income. In the latter part of 1847 he associated with him Dr. Thos. W. Evans, of Lancaster, Pa., as a partner, and then retired from general practice. Dr. Brewster made a specialty of filling teeth and correcting irregularities when first establishing himself in Paris, and for the period when he operated manifested skill of no mean order. His contributions to the literature of the profession were limited to a single article on the "Treatment of Irregularity of the Teeth," published in the French *Lancet*, Paris, 1840.

Although enjoying the possession of a large fortune, acquired in the practice of the profession, he contributed none of his means to promote its interest or advance the cause of education. Indeed, in ours as with other professions and the sciences, in all ages and all climes, advancement has been and must be mainly effected by men willing to sacrifice the mere pleasure of possessing wealth to the gratification of accomplishing some useful and enduring work, which time cannot efface, but on the contrary enhances the value of.

J. H. McQ.

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Pathologie der Zähne, mit besonderer Rücksicht auf Anatomie und Physiologie, bearbeitet von Prof. Dr. C. Wedl. Mit 102 Holzschnitten. Leipzig: Verlag von Arthur Felix, 1870. pp. 362.

We have received a copy of the above work, from the author, which has been prepared as a description of the illustrations in a work previously referred to in the Dental Cosmos, by Profs. Heider and Wedl, "An Atlas to the Pathology of the Teeth." This work, it will be remembered, was published in English and German text. The size of the present work, however, precluded the possibility of such a course; but it is to be hoped that some of our fellow-practitioners, either at home or abroad, will prepare a translation, as there is no question that it would meet with a rapid sale in America. There are a large number of new and valuable illustrations presented in the pages of this work.

J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Asymmetry of the two Halves of the Body.* By Prof. Humphry.—The professor describes a young woman, aged twenty, who was brought to him as a patient. He remarked on the peculiar appearance of the face, and was informed by her mother that she was born so, and with one arm longer and larger than the other. On careful investigation, the whole of the right side of the body was found larger than the left; the difference being most marked in the upper limb, which measured, from the acromion to the end of the little finger, two and a half inches more on the right side than on the left. In the lower limbs the difference was but half an inch. Other measurements gave a proportionate difference in the length and girth of the several parts of the limbs.

"The right mamma is seen to be a good deal larger than the left, and the right cheek and jaw seem as if swollen in comparison with the left. In fact, the crown is higher, the chin lower, the forehead and occiput more prominent, the cranial circumference a half inch greater, and the teeth less crowded upon the right side. The raphé of the lips, chin, and tongue are to the left of the median line; the right half of the tongue forms the tip, and the right tonsil is larger. The right eye, owing to its 'backwarder' situation in the orbit, and to the fact of the lids not being opened as widely as on the left side, *appears* smaller.

"She is right-handed, is decidedly stronger with the right side, and presents no abnormity of function in any respect, nor any evidence of previous disease, the trouble which she wished cured being merely an affection of the scalp.

"The only similar case which the author finds recorded is one by Broca.* The subject was a boy, aged eleven, in whom the left half of the body exceeded the right so much as to give the impression that he was formed by the union of two halves from two persons of different size and strength. For the distance from the crest of the ileum to the internal malleolus, the left side was superior to the right by 5·5 centimetres; from the acromion to the styloid process of the radius, by 2 centimetres. The measurements of the head differed correspondingly; the hearing of the left ear was much more acute than with the right, and the left eye more open than the right. The difference in this case also was congenital."—(*Journal of Anatomy and Physiology* and *Boston Med. and Surg. Jour.*)

"*Partial Atrophy of the Face.*—In this paper, Dr. Louis Lande has collected records of several cases of a rare affection which was first described by Parry in 1825, and has since been noticed by Romberg, Stilling, and others. The following case was recorded by Guttman: A. R.; eighteen; of a healthy family; up to the age of eleven in per-

* Another case is reported in the *Amer. Jour. Med. Sciences* for January, 1871.—Z.

fect health. At this time the left cheek assumed a pale tint, and began to diminish slowly. At the end of three years medical advice was obtained, and stimulating applications and electricity were tried, but without effect. The disease made progress for five years and then stopped. At the end of that time he presented the following condition: the muscular system is well developed, and, except in the face, the body presents no want of symmetry. There, on the contrary, while the right cheek is full, fresh, and rosy, the left cheek is pale and shrunken, like that of an old woman; the skin of the left cheek is thin, corrugated, and may be easily raised; the subcutaneous fatty tissue has almost completely disappeared, so that at several points the integument adheres to the bone; through its thickness the teeth my be felt; the muscles are atrophied, and the bones are thinner than on the healthy side. The buccinator, the zygomatics, the masseter, and the frontal portion of the temporal, have especially suffered. The muscles of the forehead and lips, and of the chin, are free; the muscles of the nose are only feebly attacked; the ears do not present any difference; a deep furrow ascends from the left commissure of the mouth toward the zygomatic arch and extends as far as the insertion of the temporal muscle. Near to the left commissure of the mouth, under the white and thin skin, a branch of the facial is seen beating. Some rather large veins descend from the suborbital border toward the middle of the face. The skin excoriates easily, but is never covered with sweat, even under the influence of violent exercise. The growth of the eyebrows, the eyelashes, and of the hairs, also the secretion of tears, present no difference on the two sides. Sensibility and motricity are not in any way behind those of the healthy side. Temperature is the same in the two ears (36·8° Cent.). There is no want of symmetry of the different organs contained in the buccal cavity; no difference of coloration of the gums or of the buccal mucous membrane; lastly, on each side the salivary secretion is the same and temperature at 37·5° Cent. * *

"The body of the patient presents otherwise no anomaly. Of eleven cases noted by the author, in five the disease began by a white spot, which by degrees extended and became the seat of depression. In five there was simple pallor of a portion of the integument. In three the affected region subsequently became yellow, turning to brown, as is seen in the citatrices of certain burns. The skin becomes depressed, not only by the disappearance of the subcutaneous adipose tissue, but by the modification of certain of its elements. To the touch it presents the sensation produced by cicatricial tissue. The muscles become diminished, but continue to contract; after a time the cartilage and the bones are attacked. In consequence of lesion of the cartilage, in one instance the temporo-maxillary articulation became dry and loose. The author relates the case of a young woman in whom a somewhat analogous form of progressive atrophy of the skin attacked the right inframammary region. It began as a yellowish spot the size of an almond, which extended in the antero-posterior direction. The skin became hard, depressed, and adherent, of a brownish-yellow color, bluish in certain points, the epidermis shining like that of a cicatrix. Romberg gave this affection the name of 'Trophonévrose;' Moore, Virchow, and Hasse, consider it a form of progressive muscular atrophy. Drs. Bitot and Lande point out that the muscles retain their contractility for years. They consider it a special autopathic affection, and propose

to designate it 'Aplasie lamineuse progressive.'—(*Archives Générales de Médecine* and *British and Foreign Med.-Chir. Rev*).

Tumors. Extract from Abstract of Virchow's Lectures on Morbid Tumors. By A. H. Buck, M.D., and F. Delafield, M.D., New York City. (*New York Med. Jour.*)—"Upon an anatomical basis we must separate those tumors which are the result of an actual formative process (pseudoplasms) from those which have a different origin. The latter correspond to the majority of what were formerly called *tumores cystici.* Those tumors which are not the product of a real growth owe their existence either to material that comes direct from the blood, or to the accumulation of certain secretions. If the material comes from the blood, it may be deposited in three forms: 1, Blood in substance—extravasation; 2, serum, containing water, salts, and albumen—transudation; or, finally, 3, a certain amount of fibrin with the serum—exudation. In some instances there will be found an exudation and an extravasation together in the form of a hemorrhagic exudation; or, with a large amount of serum there will be found a small quantity of fibrine—a serous exudation.

"Those tumors which represent the accumulation of certain secretions differ in the following respects: the contents may be chiefly fluid, or chiefly organized elements, or may consist of both. These cystic tumors form a class by themselves. The accumulation takes place in a pre-existing space, which becomes dilated or ectasic in proportion to the accumulation of the secretion. These tumors could be called ectases, but there is something besides ectasis, namely, the retained secretion. We shall, therefore, call them dilatation or retention tumors.

"The tumors of the first class, which consist chiefly of the elements of the blood (extravasations, transudations, or exudations), may either originate in a pre-existing space, or form for themselves a new space. These we shall call extravasation or exudation tumors.

"In this way, leaving out the entozoa and simple swellings, we obtain three large groups or classes: first, the exudation and extravasation tumors; second, the dilatation and retention tumors; and last, the true pseudoplasms or neoplasms—the *growths* in the strict sense of the word. The last class, as we have already seen, may be again divided into three smaller classes: the simple histoid, the organoid, and the teratoid tumors. Unfortunately, the classification cannot stop here, for there are many tumors in which different varieties are combined together. These are called combination tumors. In some cases these combination tumors are exceedingly difficult to comprehend.

"All heterologous tumors are not malignant. Quite a number of them are practically benign, and may be carried without ever causing any special trouble. In the first place, there are degrees of heterology. The tissues belonging to the group of connective substances are more nearly related to each other than to the epithelial tissues. If, therefore, a cartilaginous or bony tumor originates in the midst of connective tissue, or a myxoma (mucous tissue) in adipose tissue, the heterology in these cases will be far less than if an epidermoidal tumor were to originate in the midst of a lymphatic gland. A matter of still greater importance is the extent to which a tumor can produce fluid material, that may be pressed out like a juice. This parenchymatous juice is at one time deposited within the cells (intracellular), at another between

them (intercellular). A tumor containing much juice possesses to a high degree the power of infection. A dry epidermoidal tumor is much less dangerous than a moist one; a soft cancer is much more suspicious than a hard one. *The fewer vessels a tumor possesses the more will its infecting power be restricted to the immediate neighborhood; but the richer it is in blood- and lymph-vessels the closer the contact of these two fluids with the parenchymatous juices, and the easier will the infection become general.*"

Tumor of the Lower Jaw.—In presenting this specimen to the Pathological Society of Philadelphia (*Amer. Jour. Med. Sci.*), "Dr. S. W. Gross said: A. H., fifty-nine years of age, first noticed, ten years ago, a soft, fungoid mass at the gum of the lower right lateral incisor, which was decayed. On the extraction of the offending tooth the fungus shot up, and at the expiration of seven months, when it was cut away, it had attained the size of a small English walnut. The disease speedily returned, and, after the lapse of five years, it involved the alveolar border of the lower jaw, from the second bicuspid cavity of the left side to the corresponding point of the opposite side. A second operation was performed at this time, and the disease is described by the patient to have been of a cystic nature with gelatinous contents. Repullulation rapidly recurred, and a third operation, in which the gouge was freely used, and which was attended by free hemorrhage, was executed on the 10th of June, 1868, with a similar result.

"The man was brought to the surgical clinic of the Jefferson Medical College on the 9th of November, 1870, when the jaw was found to be completely edentulous from repeated extraction of the teeth. The growth felt soft and elastic, and imparted to the touch a sensation of fluctuation. Its upper or free border consisted of thickened and very vascular mucous membrane, while its lower limit was formed by the basilar portion of the bone. The central part of the body of the jaw was particularly involved, being expanded and elongated at the mental process; but the disease extended apparently only as far back as the second molar alveolus of each side. It had never been the seat of pain, and there was no evidence of hereditary taint. The submaxillary lymphatic glands of the right side were slightly enlarged,

"Professor Gross made an incision along the posterior margin of the basilar portion of the bone, which included the supposed limits of the disease; dissected up the soft parts, and divided the bone at the second molar socket with the forceps. It was then found that sufficient bone had not been removed on the right side, so that the entire body on this side, as well as the angle and an oblique portion of the ramus just above the insertion of the internal pterygoid muscle, required excision. The hemorrhage was excessively free, the blood oozing at every point, and showing no disposition to coagulate, even under the use of subsulphate of iron and the hot iron. A large number of vessels were tied; many bleeding points were included in the twisted suture; the edges of the incision were brought together by harelip pins; cloths wrung out of ice-water were applied externally; while acetate of lead, tincture of digitalis, and opium were exhibited internally. Under the combined influence of these measures the oozing ceased in seven hours.

"The tumor was composed of gelatinous material, of a greenish tint, and of the consistence of firm jelly. The mental process was perforated

in front and behind by numerous openings, through which the same material was plainly visible. The mucous membrane of the gum, which formed the soft portion of the cyst, was greatly thickened and pervaded everywhere by minute vessels.

"The tumor was referred to the Committee on Morbid Growths, which reported as follows:

"The tumor has probably had its origin in the medulla of the lower jaw in the neighborhood of the symphysis, and having by its pressure caused absorption of the outer wall of the bone, has pushed forward the thickened and inflamed periosteum, which now forms a dense cover for the exterior. At the symphysis there are a few small nodules of bone, formed by the inflamed periosteum.

"Portions of the tumor placed beneath the microscope exhibit large spindle shaped cells with well-marked nuclei and thin, fibre-like processes, often many times the length of the body of the cell. These processes are sometimes split at the end, and form a network anastomosing with neighboring prolongations of similar cells; while others, placed side by side, form long bands, which give a trabeculated appearance to these portions. The cells are imbedded in a granular intercellular material, and some portions of the tumor present in abundance the so-called 'giant' or 'mother' cells crowded with nuclei. The Committee therefore believes the tumor to be a rapidly-growing spindle-celled sarcoma (epulis sarcomatosa)."

Immobility of the Jaws. Clinic of Prof. W. T. Briggs. Reported by W. J. Sneed, M.D. (*Nashville Jour. Med.*)—"James D., aged twenty-one years, has come to us from Henry County, Tennessee, for relief of an immobility of his jaws, the result of mercury given during an attack of typhoid pneumonia, when he was eight years old. The inflammation resulting from the action of the mercury was very violent, terminating in extensive sloughing, and ulceration of the tissues on the left side of the face—not, however, involving the skin. When the parts healed, the lower jaw was rendered perfectly immovable, and has continued so ever since.

"You will observe that the left side of the face is flattened; that it is hard to the touch, but is free from cicatrices. When separating the lips, you see that, by his efforts, not the slightest motion of the jaw can be effected; that the upper teeth (more like tusks) are long, and project over the lower; that, on the right side of his lower jaw, two teeth have been extracted, and through this opening he introduces his food and drink.

"Upon examination, I find that all the tissues, from the angle of the mouth backward, are in a state of inodular cicatrization, and firmly adherent to both the upper and lower jaw. I think, but am not perfectly certain, that there is a slight lateral motion of the jaw.

"The patient is in a very unpleasant condition, especially for a young gentleman, and I propose to perform an operation for unlocking his jaw; but such operations are not always successful. Sometimes we fail to unloose the jaw at all, but more frequently, after it is separated, it becomes closed again, by the gradual contraction of the inodular cicatrices in the healing process.

"I will now divide, within the mouth, all the adhesions between the cheeks and jaws, freely. It may be necessary, at the same time, to

divide the masseter muscle, and, if I should encounter any osseous plates, I will endeavor to sever them; after which, by means of the screw lever first referred to by Scultetus, and afterward introduced to the profession by our distinguished countryman, Professor Valentine Mott, I will force the jaws asunder, if possible. Either the instrument mentioned, or little wedges of wood, should then be kept in the mouth, day and night, and pieces of slippery-elm bark interposed between the cheeks and the jaws, to prevent them from adhering. I am prepared for obstinate resistance in this case.

"(Free incisions were then made through the adhesions, in which was a plate of bone extending from the coronoid process to the upper jaw. This was divided with the bone forceps, and a portion removed, and the screw lever applied; but it was not until the second one had been added, and great force used, that the parts were separated. The jaws were then kept asunder by the instruments, for three weeks, at the end of which time the patient had regained the complete functions of his jaws, and went home, with instructions to keep the wedges in the mouth for a month or two.")

Bone, Composition of, influenced by Diet.—"M. Papillon has communicated to the French Academy some experiments made on pigeons and rats. These animals were fed daily for months with food containing small quantities of the phosphates of strontia, of magnesia, and alumina. No visible effect was produced in their health. On analysis of the bones, these substances were found in them. If these substances can be made to enter into the composition of bones by an appropriate diet, there seems some grounds for hoping that we may be able to modify animal tissues by means of medicine, and this is a subject well worthy of further experimentation."—(*Amer. Jour. Med. Sci.*)

Necrosed and Gangrenous Bone, Differential Diagnosis between. By John A. Lidell, M.D. (J. A., Jr., *Amer. Jour. Med. Sci.*)—"The contrast in appearance between that presented by a piece of bone involved in necrosis [which Dr. Lidell defines as dry gangrene of bone] and another piece of bone involved in mephitic gangrene is very strongly marked. The difference in appearance is even more striking than that which obtains between the wet and the dry gangrene of the soft parts. *Necrosed bone is dry, hard, white or yellowish-white in color, insensible, sonorous when struck, and comparatively inodorous. But osseous tissue invaded by mephitic gangrene is moist, more or less softened in consistence, not unfrequently the softening is considerable, dirty gray, dirty pale-green, or dirty greenish-brown in color, and it exhales the intolerably offensive odor of rotting bone.* Necrosed bone bears a strong resemblance to the bleached osseous tissue of the skeleton in appearance. Gangrenous bone (mephitic) does not present any such resemblance. We will take this opportunity to remark further, concerning mephitic gangrene of bone, that it is not unfrequently met with in military practice in connection with traumatic lesions of the osseous tissue. I have seen it occur in a case of gunshot contusion of the femur. I have met with it in a case of gunshot fracture of the thigh. I have seen it in other instances of compound comminuted fracture of the long bones. I have also met with it several times in the stump bones of amputated limbs. Mephitic gangrene of the osseous tissue is often associated with

pyæmia, ... although it does not absolutely depend for its occurrence upon pyæmia, still [it] belongs exclusively to certain depressed conditions of the vital powers—to certain depraved states of the body at large. . . . . The local disease with which it was always associated, according to my observations, was inflammation of the medullary tissue of the affected bone; but the relationship between them appears to me, for the most part, to have been purely accidental, and the real cause of this peculiar rot of the osseous tissue should be sought for elsewhere, and generally in a depraved condition of the whole body, but more especially of its circulating fluids."

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Syphilitic Infection from Kissing.—Dr. F. F. Maury says (*Med. and Surg. Reporter*): "I have seen two cases, one now on hand in my private practice, where a patient with mucous patches upon the lip, kissing another, developed upon the lip of the latter a hard chancre, with its attendants of indurated base, involvement of the submaxillary lymphatic ganglions, of the affected side, and a profuse secondary manifestation of roseola maculata."

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Surgery, its Improvement; Skin-grafting.—The *Lancet* pertinently observes that "surgery goes steadily on, progressing in refinement and in efficiency as it becomes more physiological. One very beautiful piece of surgical practice, for which we are indebted originally to a French surgeon, M. Reverdin, has been most successfully introduced into England by Mr. Pollock, of St. George's Hospital—skin-grafting, or the transplantation of very small pieces of skin to the surface of large ulcers. We gave an early account of the first case in which Mr. Pollock tried this practice. He brought the subject under the notice of the Clinical Society. His success was soon repeated in his own practice, and that of others. Thus we have to record a new resource in those troublesome and tedious cases of large ulcer, or of excessive loss of skin from burns, etc."

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Anæsthesia with Consciousness.—The *Lancet* says that "Dr. Richardson, the indefatigable laborer, who, by the way, must have discovered a score or two of anæsthetics, aims at the discovery of an anæsthetic which shall destroy sensation for a very short time, and yet leave consciousness, will, and organic muscular power unaffected. This will indeed be a great discovery. It will give a curious direction to our attempts to differentiate mental qualities and the parts of the nervous centres in which they reside. Dr. Richardson's experiments, especially those with methylic ether, give proof that it is possible to remove pain without abolishing consciousness."

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Anæsthesia without Unconsciousness.—In relation to this Dr. Charles A. Lee thus writes to the *Buffalo Med. and Surg. Jour.*: "In the article in your last number, entitled 'The History of Anæsthesia,' by Dr. Bennett, of Edinburgh, I notice a statement which is obviously incorrect; and, as it may lead to a dangerous and unnecessary use of chloroform, I think it important that it should be corrected. It is as follows:

"'It should be understood, however, that the anæsthetic effect is

produced by suspending consciousness, and therefore sensation and volition, by acting on the brain and medulla oblongata,' etc.

"Now, if any fact is susceptible of demonstration, it is that to annul sensibility it is neither necessary to destroy consciousness nor volition, and hence not to effect the medulla oblongata at all.

"I need not say that, when chloroform is given to this extent, there is imminent danger of arresting the processes of both respiration and circulation.

"CASE. I.—A short time ago a lady came to my office with a very painful felon on her finger. I told her it must be opened, and that the operation would not hurt her any. Pouring out a mixture of equal parts of chloroform and ether, which I always use, on a handkerchief, I directed her to hold it to her mouth and inhale it freely, at the same time pinching her skin, asking if she felt it; the moment she said she did not, I laid open the felon to the bone. A moment after she (having been looking in the opposite direction in the mean time) asked me 'when I was going to begin to act.' I told her to look at her finger, and as she saw the blood running pretty freely, while the pain was wholly removed, she could hardly believe her own senses, as she had not lost consciousness for a moment, and declared she had not felt the slightest pain.

"CASE II.—A few days since I was asked to pass a catheter in the case of Dr. T. of this village. I found he had been laboring under acute suppression of urine for twelve hours or more, accompanied with great pain and suffering from frequent unsuccessful attempts to pass a prostate catheter himself. On making a careful attempt to introduce the instrument, the doctor was thrown into spasms, with violent pain and agony, the catheter not passing more than an inch or two within the urethra. I immediately sent for the chloroform mixture, and gave it in the same way as in the former case; and when the doctor had no feeling from pinching, I passed the instrument without the slightest pain or difficulty—the patient not only not *unconscious* of what was doing, but seeing and directing the operation all the while. He declared he felt not the slightest sensation during the passage of the instrument, nor while three pints of urine were being evacuated.

"I could supplement these cases with scores of others, if necessary. I wonder that such a mistake as the above would be made at this day, and especially since the French physiologist, M. Flourens, demonstrated, several years since, that anæsthetics affected different portions of the brain successively; that sensation was affected before volition, and that the medulla oblongata was the last to feel its influence; and that when this was involved, destroying consciousness, the life of the patient was in imminent danger. I hold, that all the fatal cases from chloroform might have been prevented by following the simple method above pointed out; for it is demonstrated that death cannot happen where the article is slowly and cautiously administered, and great precaution observed."

Chloral, its Modus Operandi. (*Chicago Med. Jour.*) — "Occasional bad effects of chloral are being chronicled. A fatal case occurred recently at Guy's Hospital. Dr. Habershon commenting on it, said that it confirmed his opinion that chloral, through its action on the pneumogastric nerve, tended to produce bronchial and pulmonary con-

gestion. When there is any marked predisposition to paralysis, its use is apparently hazardous."

Chloral, as an Anæsthetic.—In its annual summary the *Lancet* states "that the clinical use of this agent has shown that it does not possess the decided anæsthetic properties which were at first attributed to it; though in the very first number of our last volume, on the 1st of January, a case is recorded in which a leg was amputated without any sign of suffering in a patient under the influence of seventy-five grains. But the dose here was large, and was followed by alarming coma, delirium, and prostration. The opinion of the operator was against the use of chloral as an anæsthetic. And this is the general result of clinical observation. It procures continuous sleep, in moderate doses, at once more harmlessly and decidedly than perhaps any other substance. For this purpose it has been found useful in almost every disease, and in pure insomnia. It is quite certain, however, that we have yet to learn more about the action of this drug. One curious circumstance is that it does not act all at once. In a case within our knowledge one moderate dose would give two or three nights' sleep. Other observers think they have discovered some depressing effects on the nervous system from its long continuance. But for occasional use, in cases where opium and other hypnotics are inadmissible, it is invaluable, and it fills us with hope that we have not seen the end of medicines of this kind. The case we have alluded to shows that we should not begin with too large doses. On the other hand, instances have been recorded in which larger doses have been given by mistake with no bad permanent effect, particularly one related in the *Lancet* of August 13, in which no less than seven drachms are said to have been taken, with only the inconvenience of a temporary loss of power in the legs. The patient in this case was a singularly sleepless man, to whom chloral at first was a delightful remedy, till it began to lose its effect, and he came to take dose after dose in the dark, until on this occasion he took seven drachms."

" *Thymol.*—Mr. Henry Draper, of Dublin, exhibited to the Dublin Chemical Club, at its last meeting, a specimen of a new preparation which has been proposed as a substitute for carbolic acid. It is named thymol, and is a derivative of the Thymus vulgaris, the monarda or horse-mint, and the Ptychotisan East Indian umbelliferous plant. It is of a similar chemical composition to carbolic acid, but destitute of the very unpleasant smell of this popular disinfectant. It melts at 44° Centigrade, and is soluble in 300 parts of water. It resembles carbolic acid in forming compounds with potash and soda, but differs from it in that these compounds are very unstable, being decomposed even by carbonic acid.

"The introduction of this preparation recalls to mind the fact that oil of thyme was in past years a favorite popular remedy for the toothache, and it is only now that its efficacy and the causes of such efficacy have been made manifest. Last year one of our foreign correspondents drew attention to this agent in a very interesting letter. The oil of thyme is prepared in large quantities in the south of France, where it is used for printing on china."—(*Med. Press and Circular.*)

"*Toothache Drops.* By Albert E. Ebert.—(*Pharmacist.*)

Take Tincture of aconite root,
Tincture of opium,
Chloroform,
Carbolic acid, of each one fluidounce;
Oil of cloves, half a fluidounce;
Alcohol, one and a half fluidounces.
Mix."

"*Eyesight and the Microscope.* (Condensed from an article in *Good Health*, by Professor John Phin, New York.)—In using the microscope, I have found that the best system is that recommended by Dr. Carpenter. It is to alternate the use of the eyes, always keeping the unemployed eye open. But I feel confident that it is of no use to keep the unemployed eye open if it be made to stare at a dead-black surface. It is the exclusion of light from one eye, and the consequent unequal action of the visual organs thus produced, that causes the mischief that we dread; and it matters not whether this unequal action be produced by covering the eye with the eyelid, or by excluding the light from it by other means—the result is the same. In making observations with the microscope, all extraneous light should be excluded from the eyes. Hence the value of a properly arranged shade. Such a shade, however, should consist of more than a mere flat sheet of pasteboard covered with velvet. It should have a perpendicular portion, rising up in front of the face, and cutting off all light except that which comes through the microscope. And now, having provided a shield of this kind—which, by the way, is easily made of pasteboard, blackened on the inside with dead-black varnish (made of alcohol, lampblack, and a very little shellac)—if we punch an inch hole at such a point that the unoccupied eye can see it in the same way that the other eye looks through the instrument, we will find that the fatigue experienced by that eye is vastly less than when it is exposed to the dead-black surface. A few trials will set at rest all questions on this head, and the change from light to darkness is easily made by simply slipping a piece of blackened paper or card over the hole.

"With few exceptions, we use altogether too much light with the microscope. Where a full flood of light is passed through a transparent object, the finer points are apt to be 'drowned' out entirely; and it is only by modifying the amount of light by means of the diaphragm that we are enabled to make out the more delicate details. Hence it will be found that the use of the bull's-eye condenser, for concentrating the light on the mirror, and consequently augmenting the amount of light passing through the object, is, in general, totally unnecessary. This arrangement of the illuminating apparatus is totally different in its effects from that of the achromatic condenser, and cannot be substituted for it, as some persons seem to think.

"The first requisite in the light that we use is whiteness. Hence daylight, the light from a white cloud, the artificial white cloud illuminated by daylight, the light from the old-fashioned argand lamp burning sperm oil, the modern student lamp burning kerosene oil, and its various modifications, and the argand gas-burner are good—their excellence being about in the order here laid down. Common gaslight, candles, and kerosene lamps are inferior just about in the order we have

named. White light is not nearly so fatiguing to the eyes as the reddish glare from a half-smothered combustion. Hence, in all cases we must seek to have the most perfect combustion and highest possible temperature of flame in our sources of artificial light. It is true that this gives rise to great heat, but this difficulty is easily obviated by the use of a proper screen or shade, and none will be found better than the one previously described. Indeed, when working by artificial light, it will be found that the heat is one of the most efficient causes of injury to the eyes; and the screen that we have mentioned is, perhaps, quite as useful, from the fact that it cuts off heat, as from its excluding unnecessary light.

"The second requisite is steadiness. Nothing is more trying to the eyes than a flickering light. Of all sources of light, the naked gas-flame is the most unsteady; and yet we have seen young men working away with it for hours. The argand gas lamp, with glass chimney, is much more steady, but it is not quite as white as a well-trimmed German student lamp, burning good kerosene oil; and as this means of illumination is the most accessible in this country, it is probably to be preferred above all others.

"There are certain conditions of nearly equal importance that ought to be found in the microscope itself, and that are found in the instruments of the best foreign makers, as well as those of this country. A very trifling want of correct adjustment on the part of the microscope produces a very injurious strain. Hence the necessity of a ready means of producing a delicate and accurate adjustment of the focus of the microscope. This is totally wanting in some instruments, and within a few days we saw, in an English scientific periodical, an advertisement of a microscope which claims superiority on the ground that it does not require focusing. Such a microscope must be essentially bad, except for a very limited class of objects. All good microscopes are furnished with arrangements for focusing. A second requisite is that the instrument should be so steady that the object shall be retained in view and in focus without change. Any tremor is injurious to the eyes, and especially is this the case when that tremor produces a continual change in the relation of the object to the focus. A single hour's work with a lens held in the hand, or mounted on an unsteady stand, will cause more injury to the eyes than weeks of work where a first-class instrument, of far higher power, is used. It has always seemed to us that watchmakers, engravers, and those who use lenses, do not sufficiently appreciate this fact. They in general mount their lenses on wire stands, which tremblingly respond to every footstep that falls upon the floor, and thus cause continual demands upon the eye for readjustment of focus. Wherever a microscope—single or compound—is used for more than a few seconds, it ought to be mounted upon a stand so firm that all vibration, and especially all disturbance of the focusing, will be avoided."—(*Scientific American.*)

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"*Plaster Casts of Natural History Objects.*—At a recent meeting of the Manchester Philosophical Society, Mr. Boyd Dawkins, F.R.S., exhibited a number of casts in plaster of Paris, of various objects of natural history, and explained the process by which any one can make them for himself. The material of the mould is artists' modeling wax, which is a composition akin to that which is used by dentists. And

as it becomes soft and plastic by the application of heat, though in a cold state it is perfectly rigid, it may be applied to the most delicate object without injury. As it takes the most minute markings and striations of the original to which it is applied, the microscopic structure of the surface of the original is faithfully reproduced in the cast. The method is briefly this: 1. Cover the object to be cast with a thin powder of steatite, or French chalk, which prevents the adhesion of the wax. 2. After the wax has become soft, either from immersion in warm water or from exposure to the direct heat of the fire, apply it to the original, being careful to press it into the little cavities. Then carefully cut off the edges of the wax all round, if the under cutting of the object necessitates the mould being in two or more pieces, and let the wax cool with the object in it, until it be sufficiently hard to bear the repetition of the operation on the uncovered portion of the object. The steatite prevents the one piece of the mould sticking to the other. The original ought to be taken out of the mould before the latter becomes perfectly cold and rigid, as in that case it is very difficult to extract. 3. Then pour in plaster of Paris, after having wetted the moulds to prevent bubbles of air lurking in the small interstices; and if the moulds be in two pieces, it is generally convenient to fill them with plaster separately before putting them together. 4. Then dry the plaster casts, either wholly or partially. 5. Paint the casts in water-colors, which must be fainter than those of the original, because the next process adds to their intensity. The delicate shades of color in the original will be marked in the cast by the different quantity of the same color which is taken up by the different textures of the cast. 6. After drying the cast, steep it in hard paraffine. The ordinary paraffine candles, which can be obtained from any grocer, will serve the purpose. 7. Cool and polish the cast by hand, with steatite. The result of this process is far better than that obtained by any other. The whole operation is very simple, and promises to afford a means of comparison of natural history specimens in different countries, which has long been felt to be a scientific need. Casts of type specimens may be multiplied to any extent, at a small cost of time and money, and are as good as the original for purposes of comparison, and almost as hard as any fossil. Mr. Dawkins has employed it for copying flint implements, fossils, bones, and teeth, which can scarcely be distinguished from the originals."—(*Ibid.*)

"*Artificial Wood.*—Artificial wood has been for some time prepared in France by compressing sawdust and blood albumen at a suitable temperature into a solid mass, suitable for cabinet-work, decoration for clocks, and interior ornamentation. It is claimed that this wood is more durable than the natural growth. Shavings and sawdust are ground to a powder, and mixed with blood sufficiently diluted with water, and dried at 106° to 120° Fah., in a suitable oven. The albumen of the blood thus becomes intimately incorporated with the sawdust, and the prepared wood in the form of fine powder is put into moulds, where it is subjected to a powerful pressure with a hydraulic press. The plates of the press are heated with gas sufficiently to reduce the contents of the moulds to a semi-fluid mass. Resinous woods are found to combine better with the albumen than hard woods. The artificial wood can be cut and worked in the same manner as lumber, and as it is made chiefly of

refuse material, the price in France is such as to render it available for many purposes. The ground wood, after being saturated with blood albumen, has the specific gravity of 0·800, but after having been subjected to the hydraulic press it is 1·300."—(*Ibid.*)

"*Solubility of Glue in Glycerin.*—Mr. J. M. Maisch read before the Philadelphia College of Pharmacy an account of some experiments on the solubility of glue in glycerin, the results of which may be summed up as follows:

"1. Glue is soluble at the ordinary temperature in a large proportion of glycerin.

"2. Glue is permeable by glycerin, slowly at the ordinary, more readily at an elevated, temperature.

"3. Glue swelled in consequence of the absorption of water, remains unchanged in appearance under glycerin—that is to say, even if the glycerin should abstract the water, the former will take the place of the latter liquid, thus preventing the shrinking of the glue.

"4 Glue, by continued digestion, dissolves completely in glycerin, gelatinizing on cooling.

"5. The solution of glue in glycerin is accelerated by previous maceration in glycerin, and by increasing the temperature (doubtless, also, by increasing the pressure).

"6. Glue thoroughly permeated by water dissolves in hot glycerin about as readily as it does in hot water."—(*Chemist and Druggist.*)

"*Sulphur absorbed by Gold, and its Effects in retarding Amalgamation.* By William Skey, Analyst to the Geological Survey of New Zealand.—The author of this paper, while recently investigating the causes of the reported loss of gold during the process of extraction at the Thames Gold Fields, observed that much of this loss could scarcely be referred to any of those causes generally supposed operative for it. He therefore tested the actual condition of the natural surfaces of numerous specimens of Thames gold, in respect to their behavior with mercury, and examined, further than has hitherto been done, into its comportment with several of those substances likely to be associated with it in a natural way.

"The results of these examinations have been minutely recorded in this paper, while the following is a short abstract of them:

"The author finds—

"(1) That numerous samples of bright, clean-looking gold, of all degrees of fineness, refuse to amalgamate on any part of their natural surfaces, though taken directly from the reef and untouched by hand.

"(2) That on such surfaces sulphur is always present.

"(3) That native gold, or gold in a pure state, readily absorbs sulphur from moist sulphuretted hydrogen or sulphide of ammonium, and absorbs it directly when admixed in boiling water.

"(4) That surfaces so treated refuse to amalgamate, though no apparent change can be observed in their aspect.

"(5) That gold so affected is rendered amalgamable by wasting in an open fire, except copper is present to the extent of seven per cent. (or perhaps less), while the same effect is produced by the contact of cyanide of potassium, chromic and nitric acid, and chloride of lime acidified.

"(6) That this absorption is altogether of a chemical nature.

"(7) That sulphates of iron in presence of air and water decomposed various metallic sulphides common to auriferous reefs, in such a manner as to liberate sulphuretted hydrogen.

"The action of sulphuretted hydrogen upon gold, in rendering it non-amalgamable when placed in contact with mercury, was demonstrated with striking effect by the author before the members of this society.

"From these results the author has been led to suppose that a large area of the natural surfaces of native gold is covered with a thin film of an auriferous sulphide, and that the greater part of the gold which escapes amalgamation at the battery is represented by that portion of this sulphurized gold which has remained unabraded during the processes of milling or extraction from the reef; the state of the gold, rather than that of the mercury, therefore, being the greatest impediment to thorough amalgamation.

"In addition to these results, the author communicated others, relative to the effect of solutions of sulphuretted hydrogen and sulphide of ammonium upon platinum. In rendering it non-amalgamable, he believed a sulphide of the metal had formed in each case, since chromic acid rendered it again amalgamable. He also stated that this metal is also so affected by ammonia or the fixed alkalies that it will not amalgamate, except in presence of a mineral acid; from which he suspects platina is capable of superficial oxidizement when in contact with alkaline substances, even at common temperatures.

"The author found that his samples of gold were not affected by the alkalies in this manner, except in the case of one from Victoria, a singularity from which was argued the presence of palladium in this particular sample."—(*Chemical News.*)

"*Fusibility of Platinum in the Blowpipe Flame.* By W. Skey, Analyst to the Geological Survey of New Zealand.—The metal platinum has hitherto been supposed to be infusible, except at a temperature that is so high as to be incapable of being produced by the common blowpipe; at least I have carefully searched for any statements to the contrary without success.

"When I was lately engaged in studying the effects of the hot-blast blowpipe flame, the results of which investigation have already been communicated to the Wellington Philosophical Society, I found it necessary to test, with accuracy, the degree of fusibility of platina; and discovered that if the loss of heat from the flame, by conduction, was guarded against, platinum can be fused with an ordinary blowpipe-blast through a candle-flame. The method adopted was to substitute, for the metallic nozzle generally employed, a tube of clay or glass, either of which is a feeble conductor of heat as compared with metals.

"By this means fine platinum points were fused in an unmistakable manner to beads. The blast was that ordinarily used in the laboratory by the use of the hydrostatic blowpipe, the flame being that of a stearine candle.

"As it might be urged that, perhaps, the plantina I treated might contain an admixture of more fusible metal, and that its melting-point might thus be reduced, I prepared some of the plantina for special trial, which was absolutely free from such fusible metals.

"As the fusing-point of platinum has been ascertained to be 4593° F., we must, from the above experiment, conclude, that if proper precautions are taken to prevent loss of heat by conduction, this high temperature can be produced by the ordinary blowpipe operating upon flames of this description."—(*Ibid.*)

Glass Cutting with Steel.—A correspondent of the *Sci. Amer.* states that "a sharp point of hardened steel will cut glass nearly as well as a diamond. Take an old, worn-out three-cornered file, grind the end to a three-cornered point, heat it red hot, and immediately plunge it into a mixture of snow and salt. Retouch it on the stone to remove the scale, and it is ready for use. If rightly done it will give very good satisfaction. In using it, hold the file nearly perpendicular, slightly inclined forward, and with a gentle pressure draw it rapidly over the glass without changing its inclination to the surface. In cutting thick glass, it is safer to cut on both sides before attempting to separate the pieces, but thin glass may be cut with the greatest facility. When the point becomes dull from use, it will produce only a ragged surface—scratch—but will not cut. It then needs regrinding. A single turn of the stone is sufficient to put it into working order again. I find such a glass cutter very serviceable for preparing glass for honey-boxes and for various other purposes."

"*Spontaneous Combustion.*—A correspondent from Bridgeport, Conn., states that recently, in the establishment of the Winchester Arms Co., at that place, some rifling chips were taken from the draining pans and thrown in the scrap heap, when, in a very few moments, they burst into a fierce flame, which required much water to extinguish. The rifling chips mentioned were fine steel shavings covered with oil." (*Sci. Amer.*)

Precaution with Paraffine when applied as a Means of preventing the boiling over of Fluids. Dr. F. Stolba.—"Since paraffine has very little, if any, affinity at all for acid and alkaline fluids, it is often used to prevent, in chemical operations, the boiling over of liquids. The author states that, while engaged in preparing sulphurous acid gas by heating copper turnings and strong sulphurous acid, he used paraffine to prevent that mixture (very apt to boil over in consequence of the tumultuous evolution of gas) from boiling over; but, after awhile, an explosion took place, caused by the fact that the gas delivery-tube had become choked by the paraffine, which in a molten state had been mechanically carried over by the sulphurous acid gas, and, on cooling in the gas delivery-tube, stopped the exit for the gas, and thus caused the destruction of the apparatus. In case, therefore, paraffine is used in such operations, the gas delivery-tubes should be wide, and the operator should pay attention if any paraffine becomes deposited in the tube."—(*Chemical News.*)

Cement for fastening Rubber to Wood and Metal.—"As rubber plates and rings are nowadays almost exclusively used for making connections between steam and other pipes and apparatus, much annoyance is often experienced by the impossibility or imperfectness of an air-tight

connection. This is obviated entirely by employing a cement which fastens alike well to the rubber and to the metal or wood. Such cement is prepared by a solution of shellac in ammonia. This is best made by soaking pulverized gum shellac in ten times its weight of strong ammonia, when a slimy mass is obtained, which in three or four weeks will become liquid without the use of hot water. This softens the rubber, and becomes, after volatilization of ammonia, hard and impermeable to gases and fluids.—(*Drug. Circ.*)

"*Paste that will keep a Year.*—Dissolve a teaspoonful of alum in a quart of warm water. When cold, stir in as much flour as will give it the consistency of thick cream, being particular to beat up all the lumps; stir in as much powdered resin as will lay on a dime, and throw in half a dozen cloves to give a pleasant odor. Have on the fire a teacupful of boiling water, pour it into the flour mixture, stirring well all the time. In a very few minutes it will be the consistency of mush. Pour it into an earthen or china vessel; let it cool; lay a cover on, and put in a cool place. When needed for use, take out a portion and soften it with warm water. Paste thus made will last twelve months. It is better than gum, as it does not gloss the paper, and can be written on." —(*Jour. of Applied Chemistry.*)

Paste.—It is said (*Amer. Artisan*) "that caseine or cheesy matter dissolved in a cold saturated solution of borax will produce a viscid liquid more adhesive than gum, and in many cases forming an efficient substitute for strong glue."

Cracking of Wooden Taps and Faucets prevented.—This is done "by putting the taps and faucets in melting paraffine, and heating them there at a temperature of 212° F. until bubbles of air cease to escape from the wood. The whole is then allowed to cool to about 120° F., when the taps are taken from the bath and cleaned from the adhering paraffine by rubbing with a dry, coarse piece of cloth."—(*Drug. Circ.*)

Lackers.—F. R., of Mass., gives the following recipes in the *Sci. Amer.*: "Deep gold lacker: 3 ounces seed-lac, 1 ounce turmeric, $\frac{1}{4}$ ounce dragon's-blood, 1 pint alcohol. Gold lacker: 1 pound ground turmeric, $1\frac{1}{2}$ ounces gamboge, $3\frac{1}{2}$ pounds gum sandarac, $\frac{3}{4}$ pound powdered shellac, 2 gallons rectified spirits wine, 1 pint turpentine varnish. Digest for a week, frequently shaking the mixture, then decant and filter. Brass color: 1 ounce gamboge cut small, 3 ounces Cape aloes, 1 pound pale shellac, 2 gallons rectified spirit."

"*Colorless Lacker.*—Dissolve $2\frac{1}{2}$ ounces of shellac in 1 pint of rectified spirits of wine; boil for a few minutes with 5 ounces of well-burned and recently heated animal charcoal. A small portion of the solution should then be filtered, and, if not colorless, more charcoal must be added. When all color is removed, press the liquid through a piece of silk, and afterward filter through fine blotting-paper."—(J. E. W., of N. H., *Ibid.*)

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ORIGINAL COMMUNICATIONS.

NOTES FOR A MEMOIR ON THE PATHOLOGY OF THE TEETH.

BY A. C. CASTLE, M.D.

Read before the First District Dental Society, New York, Jan. 25, 1871.

(Continued from page 69.)

FIRST GROUP. THE LARGE, DENSE, YELLOW TEETH.

IN connection with my previous remarks upon the subject of dental pathology, I hope, by this paper, to make clear that, however excellent we may accept art to be, it must be borne in mind that it is generally acquired long before the science is thought of,—and this especially refers to the dentist's art, by accepting which as being infallible, on individual dogmatic authority merely, must tend to retard our advance, endanger our improvement, and, at the same time, to compromise our professional intelligence and honesty; and that the limited authority of true and connected ideas is our only hope of progress and stability, of unity and development.

The science appertaining to the dentist's art is the knowledge of odontology and the pathology of the dental system for the correct treatment and conservation of the teeth. The inquiry, even if with only partial descriptions of the evidences daily presenting themselves to our notice, must serve as a guide in aiding our efforts to elucidate and demonstrate the pathogenic differences in the weaker groups, and the pathological peculiarities exhibited by the perfect organization of the first group of teeth.

We must never forget that we have learned the art of seeing truly; and, fortunately for the progress of the human mind, we live here in an age when every branch of human knowledge is reduced to a popular system; when the most important sciences lay aside the garb of pedantry and mysticism; when, in fine, the access to information is open to all, and the responsibility rests upon us individually, if we do not avail ourselves of the opportunities almost forced upon us.

In our pursuit after knowledge for rendering the comfort of life more effectual and permanent, we cannot help observing that natural philosophy, including chemistry, contributes the principal share in spreading useful information to secure these ends; nor must we omit medicine from this philosophy, for, although considered as a science, it unfortunately rests more upon the practical rules of experience than it does upon mathematical order.

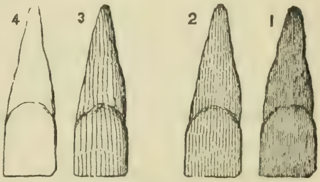
Unfortunately, few persons trouble themselves about a knowledge of nature; in fact, they remain entire strangers to her ordinary operations, even to cultivating a proper acquaintance with the constitution of their own body, until aroused by the perception of a susceptibility, more or less acute, from some organic lesion or torpor or super-functional derangement, exciting irritability, uneasiness, or pain.

In this respect, perhaps, no other part of the system meets with so much neglect as the teeth,—more especially the teeth of those persons recognized under the general name of "robust constitutions," whose almost iron frame exhibits the hard, dense-constructed bone, covered with full-developed muscular tissue; with great nervous force and vital power; whose respiratory, glandular, gastric, and all the other systems of their body work in unison and harmonious fellowship. It is here, in this well-organized class of human physical perfection, that we find the first group,—the large, dense, yellow teeth; their bone is as hard and as solid as the hardest ivory, and the crystallization of their protecting enamel is as compact as adamant, thus presenting them as the perfection of the dental organization. When we compare these adamantine teeth with the soft, cartilaginous, alabaster-like teeth,—the pearly blue-white of the fourth group,—we find, in the constitutional antitype, the delicate, nervous, hysterical, sero-lymphatic, strumous temperament and diathesis; whose muscular tissue is of soft fibre, and whose blood is deficient in red particles, and who form the large majority of the afflicted called upon to visit the dentist for relief. Now, with this marked difference staring us in the face, I believe that I am safe to say that the dental organs possess their *local*, and, as I will hereafter show, a wide-spread influence in pathological connection with the other parts of the body; and that, in these well-marked extremes, as well as the intermediate conditions of character, the teeth are more or less influenced by the health and condition of the general system; that when the health, strength, and vitality of the body enable it to resist or combat against the destructive onslaught of external and internal agents, the teeth, whatever their constitutional or physical character may be, remain intact; but when the health, strength, and vitality possess neither basis, stamina, or vital force equal to the destructive forces, the dental organs are found at once to yield. Notwithstanding the logic of truth demonstrated by the facts daily presenting themselves to

our notice, and notwithstanding that every dentist, almost every day, witnesses the effects of chemical disorganization affecting the teeth in connection with numerous abnormal complications, we are dogmatically told that if these teeth are properly filled with gold "they will last forever,"—if they are filled as *they*, the dogmatists, fill them.

I do not for an instant doubt that the gentlemen insisting upon their *own* absolute authority, and all its arbitrary assumptions, sincerely believe all they say. But to this I must remark that, if no science exists, then our art ends with the *specific* offered by them, and the various physical character of the teeth is of no consequence. And when we know that not a dentist lives who has *anticipated* and *outlived* his generation; and if it be true, as they have asserted, that none of the older dentists ever filled teeth properly—which I deny—or as perfectly as "*young dentistry*" does, I can challenge them to produce a single case in evidence to prove wherein *old* people, *retaining* their teeth to the ages of three and fourscore years, have ever had their teeth filled—or, if they have, the teeth have been filled late in life, or they were filled in fissures not "carious."

This cut represents the four groups of teeth.



No. 1. First group. The large, dense, yellow teeth.

No. 2. Second group. The dense, yellowish-white teeth.

No. 3. Third group. The chalky-white teeth, the transparent yellow-white teeth, and opaque yellow-chalky teeth.

No. 4. Fourth group. The transparent-white teeth, the chalky-white teeth, and the bluish-white, pearly teeth.

The teeth and their pathology I shall demonstrate in the classification which I have adopted. They are, severally, affected after their order, as follows: The first group, THE DENSE, YELLOW TEETH, present a firm, solid, permanent appearance, derived from their constitutional healthily supplied and perfectly combined constituents of dental requirements, which, with their complete ossification, and protection by the compact, thick, hard, perfectly crystallized enamel covering the bone, at once exhibits their character as the best specimens of dental organization.

The teeth of this group rarely decay from any disease of their substance. Their external affections may be traced to functional disorders of the stomach, producing gastric fermentation and the elimination of gastric acids, which find their way along the mucous membrane of the œsophagus, or are eructated into the mouth, mixing with the mucus and saliva, and, as if guided by some peculiar law, fixing upon or selecting certain particular spots or parts of the teeth (for the teeth are affected in the same constitutional or pathological order of decay as eruptive diseases appear in different persons), and, combining with the lime constituents of the selected spots upon the enamel, soften it into what the dentist terms a carious condition of the teeth. In some

instances these acids denude the bone of the enamel, leaving the exposed bone with a perfectly even and polished surface, and the teeth remain intact for many years; while in others—the removal of the enamel,—as the tree dies deprived of its protecting bark, so the denuded teeth decay.

Caries in this group of teeth differs from the caries affecting the other three groups. Here we find them in the character of a dark-brown colored, hard, dry, disintegrating rot, which is attended with a styptic, bitterish taste, while we find the process and progress of decay is exceedingly slow. We find the opposite in the third and fourth groups. In these the bone is deprived of its calciferous constituent, leaving a softened, mortified, cartilaginous mass in the teeth; in consistence and appearance it is either like macerated, softened horn, which the operator scoops out in small sheets or flakes, or soaked chamois leather, which is torn from the teeth in solid lumps. This dead, corrupted bone is attended more or less with a fetid taste and a fetid mouth or breath.

In this group of teeth we observe what is never seen in the other three classes of teeth, viz., *the original intention of the dental organization,—the internal vital principle,*—putting forth its powers and exercising its force in resisting the process and preventing the progress of decay; and, while this internal vital force is too feeble to free the healthy from the diseased or dead bone, as is effected in the other diseased bones by the process of exfoliation, its peculiar action is exhibited by a spontaneous cure, produced from the internal dental blood-vessels secreting and depositing in and through the tubuli or pores a new material, *osteo-dentine*, which not only is forced into the capillaries of the dental bone, but also saturates and forms a thick covering over the carious surface, thus furnishing a natural protecting shield.

This secreted and exuded osteo-dentine presents itself a peculiar amber-like, transparent substance, of a yellow-brown color, and, where discoloration of deep brown or black spots are present, they appear like incipient decay, covered with varnish, and polished. Its presence often protects the usefulness of the teeth to the last period of life. When once, however, it begins to decay, it softens, and apparently melts away with great rapidity.

Another source of caries, although of very rare occurrence in this group of teeth, is from accidental defects in the formation of their enamel covering, in the shape of deep fissures in the central depressions, in the enamel upon the grinding surfaces of the bicuspids and molars. The cause of this malperfection may be accounted for in that the process of crystallization is always more perfect when the crystal formations adapt themselves on inclined planes or sloping surfaces; hence the *striæ* of the enamel is seen to radiate directly at right angles from every point of the body of the teeth. In some instances, they do not

coalesce, or unite their crystallization in the central depressions on the manducating surfaces of the crowns of the teeth. These depressions may be illustrated by the centre dependent angle in the letter M, which, to a sufficient extent, resembles a section of the bicuspid and molar teeth. The enamel, then, not coalescing in the central part of this depression, forms an imperfect fissure, and offers a receptacle for acrid substances and gastric acids. It is the custom of some dentists to enlarge these fissures through the enamel into the bone, and fill them with gold. However theoretically excellent this practice may appear, my own experience tells me that it is as bad for the teeth as it is for the pockets of their owners, although it proves a profitable practice for those who ádopt it. If left alone, they remain free for many years, or, in the course of time, they are obliterated by the wearing down of the teeth, or they are filled in by osteo-dentine.

The next derangement of these teeth occurs at the advancing, and at a late, period of life; and it has puzzled writers not a little to account for this painful affection. My own experience informs me that it is caused by the action of gastric acidified juices, which, although not sufficiently strong to affect the powers and functions of the digestive organs, yet possess sufficient chemical force, when eliminated into and mixed with the mucous and salivary fluids of the mouth, to act upon the surface of the necks of the teeth, frequently, too, implicating the alveolar ridges, causing considerable uneasiness, gradually increasing, as the teeth are more affected, to the most intense sympathetic neuralgia, in the scalp, the neck, shoulders, arms, and even to tingling and pricking sensations in the fingers and toes.* In two cases I have met in practice, neuralgia and spasms of the stomach were the sympathetic symptoms. Another affection of the necks of the teeth consists of deep indented grooves, as if they had been filed into by a three-angled file, or had been worn into by the friction of a hard running cord, the exposed surfaces retaining a highly polished appearance, and entire freedom from sensibility. Then, again, only one or two, or nearly all the teeth, are affected in this manner; the process continues deepening through the necks, until, finally, the crowns of the teeth break off, leaving smooth-surfaced fangs behind; until this separation is effected, the bone is so exquisitely tender or sensitive as hardly to permit the touch from a hair. Often, in connection with this abnormal condition, but more generally alone, is the abrasion or wearing away of the enamel of the teeth on their masticating surfaces; this is produced by the chemical action of the gastric and acidified fluids of the mouth, which not only decompose or soften the enamel, but materially assist its mechanical friction while functionally triturating and comminuting the food.

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* Often treated for nervo-paralytic symptoms.

And here—only in this group of teeth—is seen the exemplification of the dental vital principle and the internal resources and power that perfectly organized teeth possess for their preservation and the prevention of their loss to the animal economy.

The abrasion of the enamel from the crowns of the teeth is often attended with painful symptoms. The teeth rapidly wearing down, friction and external agents impinge on the nerve-pulps within their chambers, rendering them so exceedingly tender to the touch, that even the softest food causes exquisite sensibility, and partaking of acids, or subacid fruits, or vegetable acid preserves, a thrill of deep-seated pain pervades the jaws, and sympathetically with them the whole system, as if every nerve had received the shock. The same train of painful symptoms is produced by the contact of sugar, sweetmeats, preserved fruits, cakes, molasses, honey, and certain spices, and even by the inhalation or breathing of the atmosphere. Nearly the half of rheumatic and neuralgic affections of the body are the remote symptoms and sympathetic pains of *dento-neuralgia.* In some instances the denuded surfaces of abraded teeth are entirely free from tenderness, and are insensible to the touch; but we often observe one or more concave indented pits in these abraded surfaces, showing dark-red brown stains in the concavities; these stained spots are partially oozed blood, forced, with the osteo-dentine, into the bone from the blood-vessels of the membrane of the internal chambers, which, being in approximation with the external surfaces, causes much distress. The teeth in other instances are worn into serrated points and deep-seated longitudinal grooves upon the cutting edges of the incisors, causing them to form singular meetings of articulation, shutting and interlacing with each other like the irregular cranial sutures, or the aligned teeth of a rat-trap. In others, they wear even with the gums, meeting together as two planes placed in juxtaposition. Another form,—and the only one alluded to by writers, and by them termed "*denudation*"'—is the wasting away of the teeth without any apparent cause, commencing at the central incisors of both upper and lower teeth, and extending on either side to the cuspidati and the bicuspids; so that when the jaws are closed upon each other and the molars meet and touch together, the archings of the superior and inferior front teeth form an elliptical or oblong circle, leaving a space less or more wide between the wasted teeth.

In all these forms of abrasion, or wasting of the teeth, including the grooves in the necks of the teeth, we see the vital principle and ossific resources derived from the internal blood-vessels; and with these resources we observe a very curious natural effort, and its provision, for retaining the teeth to the animal system, viz., that while the nerves, arteries, veins, and membranes are receding, *pari passu,* with the wearing down of the crowns, with this retrogressive process affecting

the teeth, the retreating blood-vessels are secreting and precipitating into their unoccupied spaces in the dental chambers, and thence into and through the tubuli, and in continuation forming on the outside surfaces of the denuded bone the same *osteo-dentine shield* which, although not so strong and indestructible as the natural enamel, yet is sufficiently hard and impenetrable to serve and preserve the teeth to an indefinite period of life. And singular it is, that while this vital effort of the internal parts to preserve the teeth is proceeding, the very act destroys the internal vital tissues themselves. The secreted osteo-dentine itself impinges upon the nerves and blood-vessels; and in place of causing inflammatory action, as a gold filling impinging on them would do, they *shrink* away from the gradual oppression until finally they secede from the teeth altogether, but leave the chambers and nerve-canals solidly filled with dentine. This completed, the teeth are insensible to pain. The whole process is perfectly illustrated and demonstrated in the worn teeth of graminivorous animals. Many a noble horse is rendered useless because of the too rapid wearing down of the teeth not allowing sufficient time for the nerves to recede, thereby superinducing acute sensibility or pain that prevents the animal eating sufficient and proper food for nutrition. Swill-fed cows suffer from the same cause and in the same manner.

After the obliteration of the internal vital tissues is completed, the fangs, and such portions of the crowns of the teeth as remain to the animal economy, present entirely different characteristics. They no longer receive nutrition; they are reduced to an inert condition, and all external destructives more or less make their impressions. First we find the dental absorbents sucking away the gelatinous, and then absorbing the lime constituents, leaving only their shrunken, atrophied remains. Here we again often observe another singular process. The absorbents having removed the original bone formation, we find in its place the new-formed, secreted (now) *greenish* amber-like osteo-dentine which had filled the tubuli of the dental bone, and which now, in its diminished character, remains the *substitute*, as it were, of the teeth fangs.

However perfect the organization of the first group of teeth may be, we find them subject to all the vital and destructive forces. They are subject to hypertrophy and atrophy of their fangs. The atrophy is always accompanied by the absorption of the alveolar processes, and the consequent receding of the gums from their necks, by the loss of which the teeth gradually loosen and ultimately fall from the jaws. This annoying affection is known, accepted, and treated by the profession as "*scurvy in the gums!*" In numerous instances the fangs are atrophied at their apices only, which are partially devitalized, and the force of the absorbents is consequently brought to bear upon them,—

sucking the apices into sharp, spiculated points, which prick into and irritate the dento-alveolar periosteum, *and also irritating the nerve*, producing sympathetic neuralgic-rheumatic symptoms in various parts of the head, neck, and body. In others, the atrophy causes a thickening, indurated, and partial ossification of the dento-alveolar periosteum, by which the teeth are gradually raised from the bed of their sockets, so that they present various irregular lines of elevation, some projecting far above their fellows. With these elevations the gums recede in the same ratio, when, finally, one after another the teeth drop from their positions —apparently to the inexperienced—in a sound and perfect condition.

Several other pathological conditions exist, but I deem that these I have already mentioned furnish ample proof that the teeth *do* possess a pathology, *and an important one, too;* and I have not mentioned the connection of the great sympathetic nerve with the dento-fifth pair of nerves. With these numerous demonstrative proofs before us,—even including the first-class group of dental perfection,—I challenge any and every dentist in the whole world of our wide-cast profession, by any extra ocular demonstrating proof, to advance a solitary evidence that the mere sheathing or filling in and covering the exposed surfaces of cavities in carious teeth with amalgam, gold, or any other material, however perfectly (mechanically) accomplished, *has ever* or ever will "make the teeth last forever," *i.e.* to the end of old age.

The true knowledge of the pathology of the teeth for the progressive advancement of dental science, extends far beyond the expert manipulation necessary for filling holes in teeth. And once the dignity of its true character being recognized by the light of pathogenic truth, the dental student will appreciate at its proper value all the "Sir Oracle" twaddle of accomplishing odontological impossibilities. By which, too, he will observe a curious pathological anomaly. The fifth pair of nerves is divided into three great branches: first, the ophthalmic; second, the superior; third, the inferior maxillary nerves. The branches, subdivisions, and filaments of the two latter great branches again join and intermix with the ophthalmic branches, and also with the seventh pair of nerves—the nerve of hearing. And, with the common origin and intermixing of the teeth nerves with the ophthalmic nerves, we see an apparent unimpressible, harsh dental pathology connected with that of the exquisitely tender and delicate pathology of the organs of vision. We must exclaim, How great their extremes, yet how opposite their preservation! Who will not acknowledge the beneficence of the Great Architect of our creation,—that the all-necessary, delicate, wonderful organs of vision should be permitted to escape destruction and disease by only one-half of one per cent. against the ninety-five per cent of the human family losing their teeth? And of the functional disorders of the eyes, five per cent. of them are mere sympathetic impressions pro-

duced by dento-nervous irritation. The same phenomenon refers to affections of the ear, and also extends to the scalp, implicating the vast network of nerves spreading throughout the scalp and its tissues, producing pathological changes, by which the force of nutrition is retarded and the roots of the hair are atrophied,—when, like the teeth, the hair becomes thin and ultimately "falls off." The real study of pathology and odontology will explain all these phenomena.

In continuation, I would incidentally remark that the teeth of the first group are firmly fixed in their hard, dense, strong sockets, and that considerable nerve and skill are required to extract them from their articulations without partially breaking them or doing injury to the neighboring parts.

I would also call your attention to the peculiarity of another diagnostic mark in connection with the teeth. I allude to the *salivary calculus*, or tartar, as it is termed,—the calciferous incrustation deposited upon the teeth by the chemical combination of gastric acids with the lime constituents of the saliva. It differs altogether from the tartar deposited on the other classification of teeth. It is exceedingly hard, close, and brittle; of dark, ivy-green color, admitting a high polish. It adheres firmly to the teeth, requiring considerable force to disengage it, which is accomplished with a sharp click sound. It forms a semilunar arch round the enamel outline; sometimes it completely engirdles the necks of the teeth immediately beneath the margin of the gums, rarely extending upon the anterior faces of the teeth.

I conclude these notes upon the pathology of the first group,—the large, dense, yellow teeth; teeth that are only to be seen in the highest order of the physical perfection of man's organization; teeth that are rarely found in a state of malformation or in irregular alignment in their massive, well-developed, well-formed maxillary bones. If we seek throughout the world, and examine the dental conformations of the whole human family, from the highest *caste* of civilization to the lowest grade of savage life, it will be always found that the group of teeth I have described will be possessed by the robust, strong, well-constitutioned, finished, organized specimens of God's exalted creation.

NEW THEORY IN DENTAL HISTOLOGY.

THE POSSIBILITY OF THE OFFSPRING OF THOSE WHO HAVE LOST THEIR TEETH EARLY BEING BORN WITHOUT TEETH OR EDENTULOUS.

BY S. P. CUTLER, M.D., D.D.S.

Read before the New Orleans Dental Society.

Two theories have been advanced as to the determining cause of inherited forms, the older writers, such as Wolfe, in his "Theoria Generationis," laying the foundation of the later hypotheses of Lamarck and

Michel, of laws of descent and adaptation, through modifying influences. Similar views have been advocated by Geoffrey St. Hilaire, Bonnet, Robinet, Milne Edwards in his "Recent Progress of Zoological Sciences;" and by the still more recent developments of Darwin, in his "Origin of Species by Natural Selection;" by Claude Bernard, in his "Recent Progress of General Physiology," and Herbert Spencer's developmental or evolution hypothesis. To these may be added the researches of Lereboullet and M. Dareste, on "Embryology and Teratology," and also those of Prof. Huxley.

Now, should the theories adopted and advanced by the above-named authors prove to be true, my hypothesis, presented in this communication, will have a valid foundation.

On the contrary, should the doctrines advanced by equally distinguished names, such as Cuvier, Owen, Agassiz, and many others, adopting the idea of the fixedness and unchangeableness of types depending on predetermined plans of archetypal primordial cell germs, then my hypothesis has no good foundation.

As extremes must compromise on middle grounds, there will, at least, be some foundation left for me.

As instances of illustration, I will mention the fact that on the Isle of Man there are species of cats without tails more than an inch in length. It is believed that the ancestors of these cats, from generation to generation, had their tails cut off by their owners, from a whim or custom, until ultimately the protoparous or offspring came without tails. I have seen many of these cats. There is a species of small French dogs without tails. I have seen these dogs. I am not familiar with their tradition. Their ancestry, no doubt, once had tails.

Now, suppose we were to cut off all the tails of all the dogs and cats in the country for generations, the result would be, beyond a doubt, caudatulous, or tailless dogs and cats; at least many of the offspring would have no tails, from a law of necessity based on habit.

Here, is the point I wish to argue. When an animal is maimed in any not over-vital part while quite young, there is, from necessity, a weakening of nerves and vessels running to such part, or an atrophied condition; as the animal grows, the development in that direction is defective, in consequence of less vitality.

Now, if there is any truth in the modifying influence of habit, which has been sufficiently and repeatedly demonstrated within the last fifty years, may not the same rule hold good in that of the wholesale extraction of teeth, more especially those of the female when quite young, and repeated from generation to generation? The influence on the female might be supposed to be greater than on the male.

In the removal of all the teeth, let it be remembered that there has been removed from the maxillary organs several hundred millions

of nerve fibrils or filaments, more or less, together with their blood-vessels.

From a law of necessity, the nerve trunks and vessels running into the maxillary bones to the teeth must become more or less atrophied, and a less amount of vital force is even demanded by the organism, at least minus the amount previously needed to sustain those organs.

As the cosmical universe is made up of cycles and epicycles, or greater and lesser cycles, the organism forming a part of the cosmos, these same cycles equally exist in the organism, and, by dismembering any part, there is a change or disturbance in the cycles of such region. May not the cycles so modified, in the course of generations, impart their impress on the fœtus ? Is it not more reasonable to suppose the above condition than that a monkey, by curtailing his tail, becomes ape, then man, from the fact that when he became man he had no longer any use for a tail ? Hence the offspring were minus their tails.

Let us again look at mother-marks, or nævus maternus, and see what influence the mind has on certain regions of the body of the fœtus in utero, in some cases changing the entire being into a monstrosity. (See "Treatise on Teratology.")

Longing on the part of the *enceinte* female for certain articles of food leaves or imparts the mental influence on some portion of the child's body, showing the influence of mind over germinal matter at certain stages of development.

Frights, and other sudden and powerful emotions, impart certain changes in fœtal development.

All the above-named influences are reflex action through the neural forces of the mother, which are continued through the fœtal organization. Sometimes such influences cause complete arrestation of fœtal development; in other instances, deficiencies in one region and protrusions beyond the normal boundaries in other regions—in other words, changing the normal type.

What do such facts prove, or how do they apply to the subject ?

In the first place, we will suppose that the rubber dentist, who is wholly incompetent to save teeth, constantly advises his victimized patient to have all her teeth removed, as they cannot be saved, or are not worth the trial; and her constant declaration that she wished she never had had any teeth at all, as they had always been troubling her.

These very assertions and influences of the mind over the nutrition of these organs may ultimately so arrest normal nutrition as to render the teeth less resistant to outside influences. Supposing these influences are uppermost in the mind during gestation—what effect might not be produced ?

There are well-authenticated cases where domestic animals, having had limbs removed by accident, have brought forth offspring similarly

maimed, and those offspring have done so in turn for a number of generations

These are all striking proofs of my position.

We find bad teeth and certain peculiarities connected with the forms of jaws hereditary in certain families ; so much so that, unless prevented by favorable crossing, they expect their children to have equally as bad teeth as themselves ; and they are not generally disappointed.

Hereditary peculiarities in dental conformations are constantly presented to the dental practitioner. Peculiar features of certain teeth in the mouths of parents are often recognized in the third generation, and we do not know how much farther off.

Harelips and badly-fissured palates are frequently handed down in uninterrupted succession in some of the offspring, while others of the offspring are exempt—though in these cases of exemption outcroppings are frequently noticed in their children.

Kyllosis, or club-foot, we see hereditary from the female side only, owing or depending on position of fœtus in utero, never being transmissible from the male side unless through his daughter, in case his mother was of that class, the cause being dependent on peculiarity of pelvic form of the female.

Many other cases in confirmation of my position in relation to teeth might be given, if necessary.

Again : supposing all the teeth of the grandmother, mother, daughter, granddaughter, great-granddaughter, and so on, for many generations in succession, were extracted while quite young from defective development, what would be the probable ultimate consequences ? In all probability the offspring would be born edentulous or toothless.

The same rule will also apply to the male parentage to a great, but not likely to the same, extent as to the female.

We sometimes meet with persons that never had any teeth at all, or even rudiments. On the other hand, we meet with persons having supernumerary teeth, though they are generally small or otherwise imperfect. We sometimes meet with persons having cut their third set more or less complete.

In the latter cases there is an excess of vital formative force repeated late in life. Whether these teeth had their germs developed in fœtal life or not, is an unsettled question, as we have not sufficient data on this subject. I have seen a number of cases where several teeth had made their appearance after all the others were either out or decayed off. I saw an old lady who had cut a tooth in the anterior portion of the upper maxilla, near the mesial line, resembling a canine, lying nearly horizontal with the ridge. She has one upper molar only, and about half of the under set, quite sound. She had worn a gold plate many years.

There is no doubt in my mind but that organic structures are susceptible of important modifications from force of habit alone, by artificial means continued in one direction for a considerable length of time.

I have seen one edentulous case, a judge, who never had any teeth in his mouth. The well-known Keith family, of South Carolina, from generation to generation back, have been born without any teeth at all, even when marrying out of their own immediate family. The peculiarity in this family is very noted and persistent. Atavism we often notice where a saltus has been made past one or more generations, then cropping out again, as in many of the above-cited cases.

Now, the point I wish to argue is this: that if this theory should prove correct, we may reasonably calculate on the dentist's occupation being gone for lack of material to operate on. I do not pretend that children will be born with rubber or any other kind of plates in their mouths, but that they may be born without any tooth germs.

In furtherance of the above hypothesis, I will copy an article published in the *New Orleans Times*, Nov. 13, 1870, which goes far to confirm my views:

"*More about Hereditary Deformities.*—An intelligent observer, in a pleasing note to the editor of the *Times*, gives a very interesting case of accidental and hereditary distortion; some persons think so very singular as to doubt its truthfulness. In a scientific point of view this case is a most interesting instance of the doctrine of natural selection in the modification of species, but not as Dr. Darwin and the ingenious Mr. Wallace discuss the alluring hypothesis. These gentlemen urge that such variations of species is a natural law. So uniform is this law from their standpoint, that they dignify it with the imposing name of natural selection.

"Now, all the cases which I noted in my article of 1st October, and the curious cases of the kittens and the kittens' kittens being marked with the peculiar tail of the deer, are accidental modifications.

"The distortion did not originate by what can be logically called a law of natural selection as the principle in producing this deviation from nature. The instance was a perfect *lapsus naturæ*, nothing more.

"The case is so interesting, that I shall reproduce it as it was published in the *Times*, and add other instances of the confirmation of the fact of the accidental origin of the modication of species:

"'To the Editor of the New Orleans Times,—In the science column of October 1, Dr. Thomas Nicholson gives some remarkable instances of hereditary deformities. To those mentioned by him allow me to add a very singular example which I know to be a fact:

"'Some twenty years ago a family in one of our Louisiana river parishes owned a pet cat. The cat had no noticeable peculiarities; neither were her kittens in any way remarkable. After the fourth litter a pet deer was presented to the family, toward which the cat at once exhibited great aversion, seeming to be jealous of the caresses bestowed upon the new pet; also at times evincing great terror. There

sprung up a fierce enmity between them,—the deer frequently gathering his forefeet together and endeavoring to spring upon the cat as he would have done upon a snake in his native forest, the cat in return flying at his eyes with great ferocity. The deer remained in the family but a few months; he swam across the Mississippi River, and was seen no more, but from that time forward the kittens and the kittens' kittens, from generation to generation, through a period of nine years, to my personal knowledge, were marked by the peculiar *tail* of the deer.

"'JEANNIE.'"

The general principle implied in this interesting note is confirmed by the following, translated from the German work of Dr. Theodore Waitz on "Anthropology," by Mr. Collingwood. Speaking of animals, he says:

"*Mutilations are sometimes transmitted.*—Williamson saw in Carolina dogs which have been deficient in tails for three or four generations, in consequence of one of their ancestors having lost it. A cow, three years old, which had lost her left horn by suppuration, produced three calves which, instead of the left horn, presented only a small protuberance of the skin. Dogs and horses, whose tails or ears are clipped, as the draught-dogs in Kamtchatka, often transmit these deficiencies to their offspring." (Vol. i. p. 81.)

He refers now to hereditary deformities in man:

"Instances of hereditary blindness and deafness and of alternating dumbness, so that every second or third child was deaf, are given by Lucas. Harris communicates a case of hereditary blindness in one eye, and of a double thumb on the right hand. Instances are not wanting of mutilations that have been transmitted from parents to children. Such, however, occur less frequently. According to Blumenbach, the children of an officer whose little finger had been cut across and became crooked, possessed an analogous defect. Goss cites the case of an officer wounded in the battle of Eylau, who transmitted to his offspring a scar on the forehead." (pp. 84–85.)

The last two cases have been mentioned before. These facts had such an influence on the mind of Blumenbach, that he queried whether such accidental distortions did not originate native varieties of animals. He says:

"Can mutilations and other artifices give commencement to native varieties of animals? I have not at present adopted as my own either the affirmative or the negative of the opinion. I would be thankful to receive any more truthful facts relating to this subject. The religious ordinance of circumcision among the Jews would seem to militate against the above hypothesis, if it was not for the fact that the removal of so slight an amount of integument amounts to scarcely nothing at all—the male, and not the female, being the subjects of this custom."

CHLORAL.

BY E. HAUSE, TECUMSEH, MICH.

THINKING it may be of interest to some of the profession, I give my experience in the use of hydrate of chloral in a few cases.

Case I.—Mrs. B., quite nervous (hypochondriac), called to have both upper dentes sapientiæ extracted. Gave 10 grs. chloral; waited ten minutes; gave 10 grs. more, and after fifteen minutes gave 15 grs. Within ten minutes she was sleeping, but not sufficiently unconscious to allow the extraction of a tooth; gave her a few inhalations of chloroform, and performed the operation successfully.

Case II.—Miss P., aged sixteen; gave 15 grs.; in fifteen minutes gave 10 more; waited ten minutes; extracted the tooth; patient was fully awakened, but experienced no pain. After twenty minutes she fell asleep for two hours, then awoke feeling much refreshed; had not slept any the previous night.

Case III.—Miss B. came to have "all her teeth out" (eighteen teeth and twelve roots); gave her

Hydratis chlorali, 30 grs.;
Aq. destil., ℥iij;
Mucil. acaciæ, ℥ss.

Waited fifteen minutes, then gave 20 grs. more. After the lapse of fifteen minutes, commenced operation. Extracted two teeth and let the patient rinse her mouth; then extracted two or three more teeth, so on till all were out. The patient then rode home (three squares), slept three hours, felt quite well, and was about her work next day. She had no bad feeling in the head, as after taking chloroform.

Case IV.—Miss V.; gave 30 grs.; within fifteen minutes gave 10 grs. more. After twelve minutes I took out her upper teeth (ten in all). The patient felt some pain from the first tooth extracted, but none after that. When the bleeding had subsided, she slept about an hour (similar to a person "dead" drunk on liquor), then went home, still under the effects of the chloral.

In connection with the above, the following extract from *The Medical Gazette* is presented, as evidence that

"*Chloral is Dangerous.*—Under this heading the *American Practitioner* cites the case of a consumptive lady to whom chloral hydrate had repeatedly been given previously in doses of from ten to fifteen grains to allay coughing, and once or twice as a hypnotic in twenty-grain doses, always with good results. On a late occasion, however, after taking a single dose of one scruple, obtained from the same druggist who had furnished it formerly, the patient passed quickly into sleep, and soon after fell into a state of alarming coma, which lasted for twelve hours. There was no uræmic poisoning, and the patient recovered.

"Warning has already been given of the danger of chloral in cases where there is a tendency to respiratory embarrassment (*Medical Gazette*, Oct. 8th, 1870); but from the comparatively small dose given in the above example, and the fact that the patient had shown perfect tolerance of the remedy in similar quantities before, we should be inclined to suspect the quality of the drug last administered, especially as we have reason to believe that the article sold as hydrate of chloral is in a large number of instances poisonously impure."

OBTAINING IMPRESSIONS OF DIFFICULT PARTIAL CASES.

BY CHAS. J. ESSIG, D.D.S.,
DEMONSTRATOR OF MECHANICAL DENTISTRY IN PHILADELPHIA DENTAL COLLEGE.

To obtain correct impressions of difficult partial cases, where the position of the remaining natural teeth form dovetailed or keystone-shaped spaces, or where by the recession of the gums, we find teeth with narrow necks and broad, cutting edges, a form of tooth which cannot but increase the difficulty of securing an accurate model of the mouth, the use of plaster will be found to produce the best results, both as to correctness and comfort to the patient. In many of these cases, especially in the mouth of aged persons, some of the remaining teeth may be found, from the recession of the gums, to be loose, and the surrounding tissue so inflamed and sensitive, that even the pressure necessary to obtain an impression in wax would cause pain to the patient and danger to the loose teeth.

An impression cup should first be selected of the proper size and shape,—those with the flat floor are best for partial cases; the plaster should be mixed thin, almost as thin as water, adding chloride of soda to facilitate setting. Plaster mixed in this manner does not become as hard and unyielding as that mixed merely to saturation. Now oil the cup so that it will readily separate from the impression when hard, fill the cup as soon as the plaster thickens sufficiently, then, with a small spatula, place a layer of the soft plaster in upon the palatine surface, otherwise by inclosing the air in the deep portion of the arch the accuracy of the impression may be impaired. After this precaution, the cup is placed in the mouth, and gently pressed up until its floor comes into contact with the teeth. When the plaster is sufficiently hardened, remove the cup, which, from its having been oiled, is done without difficulty; with the thumb and index finger break off the outside walls, the portion covering the palatine surface is then removed by the use of a blunt, steel spatula, curved at the end in the form of a hook. The pieces are then placed back into the cup, where they will be found to articulate with perfect accuracy.

Should the first attempt be rendered futile, by a tendency to nausea, or troublesome gagging on the part of the patient, camphor-water, used

as a gargle, will, in nearly every case, prove an effectual remedy. (The credit of this valuable discovery is due to Dr. Louis Jack.)

In cases of fracture of the inferior maxillary, it is often necessary to obtain an accurate impression, in order that an apparatus may be constructed which, by clasping the teeth, will assist in holding the portions together until nature brings about a sufficient union. In such cases we could not think of forcing a mass of wax into the mouth and down around the teeth; indeed, the very pressure necessary to do so would force apart the broken bones, especially if the fracture be a compound one. By far the better plan would be to employ plaster, in the manner described for difficult partial cases.

NOTES IN DAILY PRACTICE.—NITROUS OXIDE.

BY CHARLES A. P. GARNSEY, CHICAGO, ILL.

HAVING noticed a few remarks in the January number of the DENTAL COSMOS on the length of time that nitrous oxide would retain its anæsthetic properties, from a Lambertville (N. J.) writer, I am led to cite a few cases in my own practice for the pages of your valuable journal, showing what *can* be done with this "nulli secundus" agent in our specialty; having produced seventy gallons of the gas in a Sprague gasometer, and having administered it *direct* from the gasometer through a valved inhaler, and *not* from a *slimy, unhealthy rubber bag.* The following are from notes taken at the time:

Case I.—Adult, female. Gas given third day after making; amount, three gallons. Extracted two teeth. No pain. Very pleasant. Time from taking the chair to leaving it, five minutes.

Case II.—Adult, male. Gas given seventh day after making; amount, three gallons. No pain. Extracted one tooth. Time of operation, two minutes.

Case III.—Adult, female. Gas given thirteen days after making; administered twice; amount, nine gallons. Extracted eight teeth. No pain. Patient had been sick for ten days.

Case IV.—Adult, male. Gas given seventeenth day after making; amount, three gallons. Extracted one tooth. No pain. Time of operation, two and a half minutes.

Case V.—Adult, female. Gas given fourteenth day after making; amount, sixteen gallons in three separate inhalations. Extracted seventeen teeth. Only slight pain from last three in consequence of fracture. Teeth firmly set.

Case VI.—Adult, male. Gas given twentieth day after making; amount, six gallons. Extracted one tooth. No pain.

Case VII.—Adult, female. Gas given twenty-ninth day after making; amount, five gallons. Extracted four teeth. No pain.

Case VIII.—Adult, male. Gas given thirty-fourth day after making; amount, four and a half gallons. Extracted one tooth. Only slight pain; nothing to speak of.

Case IX.—Adult, male. Strong and robust. Gas given thirty-sixth day after making; amount, seven gallons. Extracted one tooth. No pain. Time of operation, three minutes.

Case X.—Adult, male, Scotchman, robust, muscular. Gas given sixtieth day after making; inhaled four and a half gallons. Extracted one tooth; case of chronic periostitis. No pain; knew nothing while under its influence. Time, two and a half minutes.

The above are only a few of every-day cases. I will merely add that I did not know that any one was green enough to *mix* chloroform and nitrous oxide, as it is well known that these two agents are in direct antagonism, and to a great extent antidotal in their influence.

DESTROYING THE PULP WITHOUT PAIN.

BY O. J. BOND, MARION, S. C.

In the September number of the Dental Cosmos, vol. xii., there is an article from J. Neelands, Canada, wherein he states that a few months since he had accidentally discovered that an application of carbolic acid, applied for ten or fifteen minutes to an exposed pulp previous to the application of arsenical paste, would prevent pain in its destruction.

If you think it will be of service to any brother in the profession, and worthy a place in the Dental Cosmos, you are at liberty to publish the following method. It is one which I have practiced since 1860, with much satisfaction to myself as well as to my patients.

After preparing the cavity so that it will retain a filling of Hill's stopping or osteoplastic (I prefer Hill's stopping, as it is more easily removed, though in some cases the osteoplastic is preferable), place upon the extension bracket a small glass slab, upon which drop one drop of either creasote or carbolic acid, deliquesced (I use the latter now); then take a piece of lint cotton, which, when rolled between the thumb and finger, will be about the size of a duck-shot, and saturate with the drop of carbolic acid; now place upon the slab the amount of arsenical paste desired, and upon it the saturated cotton, giving it a few rotary motions to absorb the paste. Cut from Hill's stopping a piece that will be large enough to fill the cavity; light an alcohol lamp, dry the cavity, and apply the piece of cotton *directly to the exposed pulp;* warm the Hill's stopping by holding it *near* the flame of the lamp, and when quite soft

introduce; trim off superfluous quantity, if any, and smooth with burnisher.

On removing the filling at the expiration of the time desired for the preparation to remain (depending upon the amount of arsenic used; I use about as much as would occupy the space of a medium-sized pin-head, and allow it to remain forty-eight hours), it will be found that the pulp has been destroyed, and the patient will not have experienced *any* pain.

In addition to the effect of the carbolic acid, the filling of Hill's stopping or osteoplastic *excludes the atmosphere.*

OXYCHLORIDE OF ZINC TO PROTECT DENTAL PULPS.

BY THOS. B. HITCHCOCK, M.D., D.M.D.,

PROFESSOR OF DENTAL PATHOLOGY AND THERAPEUTICS IN THE HARVARD DENTAL SCHOOL.

In the *Dental Register* for February, 1868, there is presented a table giving the result of the treatment, by oxychloride of zinc, of forty-four cases of nearly-exposed dental pulps, and thirty-four cases of exposed pulps, seven of which had bled. In the cases of nearly-exposed pulps, the oxychloride of zinc was used to protect this organ from thermal changes communicated through the medium of the gold fillings which were inserted over the oxychloride of zinc. Inasmuch as I stated at that time, as far as I was aware, that I had not had a failure, I feel that I should give the result of my records to date, which have been kept with considerable care, though a few cases have not been recorded.

To January, 1871, I have used oxychloride of zinc to protect pulps not exposed, 295 times; over exposed pulps, 68 times; over exposed and bleeding pulps, 37 times; over exposed pulps in all, 105 times. Making a total of 400 cases.

In a few of the cases of exposed pulps, the metallic fillings were not inserted at the same sitting at which the oxychloride of zinc was applied, the temporary fillings remaining in from one to eight weeks, and in one instance six months. When the permanent fillings were introduced, the pulps of these teeth were alive.

I have endeavored to follow these cases, and when the teeth come under my observation generally take occasion to test them for vitality of the pulp, by the application of cold water, a pencil of ice, or a hot instrument upon the gold filling or enamel. It is hardly to be expected that I should know the result of every case, though in the great majority of instances, upon the occurrence of trouble, the patient would come under my observation.

The result is that in six of these one hundred and five cases I am positive of the death of the pulp, most of them having been followed by periodontitis.

These failures have made me more cautious in this method of treatment. I now use arsenious acid in many of the teeth having exposed pulps, which I should once have treated with oxychloride of zinc.

RETENTION OF TEMPORARY TEETH.

BY W. H. TRUESDELL, ELGIN, ILL.

I NOTICE in the January number of the DENTAL COSMOS, under the head of "Dental Anomaly," that Dr. Rice mentions a very singular case.

The following quite as remarkable case came under my observation: A Mr. Chapman, of this place, some months since called on me in regard to his teeth. I was surprised to find *all* of his superior teeth deciduous. On questioning him, he stated that he was fifty-four years old; never had shed any teeth, and had only had two extracted in his life. The spaces remain unoccupied.

The tooth I inclose with this note was troublesome, the gums swollen, and, at his earnest request, I extracted it. On examination it will be seen that absorption has, to some extent, taken place in the root. Query—Where are the *permanent* teeth?

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

CANADA JOURNAL OF DENTAL SCIENCE.

In an essay entitled "Practical Hints on Mechanical Dentistry," read before the 7th and 8th District Society of New York, Dr. R. G. Snow calls attention to some probable causes of spongy gums:

"Much was said, also, at the last meeting of the American Dental Association, in regard to the effect of dental plates on the soft parts of the mouth. Many attribute the soft, spongy state of the gums which we sometimes see to the effect of rubber, or rather the mercury in the rubber. Others had seen spongy gums apparently produced by wearing gold plates. Each had his opinion at the commencement of the discussion, and each had also at the conclusion. Now, I apprehend that there are two causes, neither of which were alluded to in the discussion at Nashville, which tends to produce a spongy, diseased state of the gums in the mouths of those who wear dental plates, and neither of them having any reference to the material of which the plate is made.

"First. The continual wearing of the plates, night and day. Now, it must be apparent, on physiological principles, that this constant pressure of the plate prevents the normal circulation of the blood in the parts pressed upon, thus tending to produce this red, inflamed, spongy state of the gums.

"Second. The wearing of badly-fitting plates. Some of the worst cases I have ever seen were produced, so far as I could judge, by perseverance in wearing badly-fitting plates. They, of course, keep up a constant irritation, and tend to inflammation and a spongy state of the parts.

"This leads me to say once more that patients ought never to be allowed to wear a plate after the parts have changed by absorption so as to destroy its accurate fit; no plate ought to be worn unless the fit is good.

"Patients ought also to be instructed to leave their plates out when they retire for the night, and allow the gums to recuperate, and as far as possible establish a healthy circulation.

"I might mention a third cause, and that is a constitutional predisposition from a syphilitic taint, or some other similar cause. This of course would require constitutional treatment, and is not in my province at present."

British Journal of Dental Science.

Dr. W. C. Williams contributes the following case of Salivary Calculus:

"A case occurred in my practice a short time ago. A lady recently called to consult me with regard to a swelling on the right side of her face. It had the appearance of an alveolar abscess, but on examination I found a large deposit of tartar on the buccal surfaces of the two upper molar teeth opposite the orifice of Steno's duct. The largest piece I removed whole weighs thirty-six grains, and measures at its largest diameter seven-eighths of an inch, at its smallest half an inch. The surface next the cheek is round, quite smooth, and nearly white. The two teeth underneath were quite loose, but have since become firm. The lady herself imagined it was bone growing from the jaw, and put off having advice until it was so far gone for fear a severe operation would be necessary. It is probable that some of your readers have met with similar cases. I am aware that larger deposits have been found on the lower teeth, but one would think that the action of the buccinator muscle would prevent so large a deposit on the upper jaw."

Dental Register.

Dr. W. H. Atkinson, reported by T. O. Summers, says:

"Now, sulphuric acid is the remedy for necrosis or caries of bone, from the chemically pure down to the compound aromatic sulphuric acid—the elixir vitriol (SO_3,HO), of the shops. If I had heard that twenty years ago, I would not have believed it. It is based on the law of affinities in that diagram which I have just explained. I once had a case of necrosed spinous process of the second lumbar vertebra, in a female patient. By inspiration, for you know it is the inspiration of the Almighty that giveth us understanding, I touched it with sulphuric acid, and I had such a cure that the surgeons denied that there had ever been any necrosis at all. I acted on that hint, and am now ready to pronounce it a *cure.* There is an affinity between the salts of lime which make the bone hard, and the sulphuric acid (when the bone is deprived of its vitality), that it acts on all the lime deprived of animal life, and produces solution. The following expresses the reaction:

"Phosphate of lime + sulphuric acid = sul. lime + hyd. phos. ac. $CaOPO_5 + SO_3HO, = CaO,SO_3 + PO_5HO$. Sulphuric acid does not act on cell life. I have had such marvelous results from this treatment that I announce it from my head clear down to my *pyramidalis abdominalis*.

"If you follow *this*, ugly cutting in the mouth is at an end. What are the forms of diseased bone to be treated in this way? One is when the solution of lime salts leave the matrix of animal matter—*mollities ossium*. Another form of death in bone is necrosis, where a considerable territory is deprived of pabulum. Another, osteal ulceration or caries, where only the outside stratum of cells is thus affected, and there is an attempt at reproducing the solution of lime salts. In this case there is considerable swelling and drawing up like the *columnæ carnæ* of the heart, and you will diagnose it as *osteal cyst*. It is not *exostosis*. Now what do you do? Why, puncture it and inject sulphuric acid. Protect the external parts. Make a little pocket so as to form a clot. With a little ingenuity you can accomplish this with a bit of rubber. Now don't go and inject three quarts in a person's mouth. Clean out the cavity, and get it as dry as possible with bibulous paper. Then take a hypodermic syringe and inject the sulphuric acid, drop by drop, and it will be drunk up by the necrosed bone like syllabub. Then dress it with two parts tannin and one part glycerin on a little mat of cotton.

"This treatment will do for any bone that is necrosed.

"You can discover whether the bone is saturated in two or three days, or eight days at most."

DENTAL TIMES.

In the Report of Proceedings of Pennsylvania Association of Dental Surgeons we find the following:

"The subject for discussion for the evening was, whether or not vulcanized red rubber contains any free mercury.

"In opening the discussion, Dr. Wildman stated that he had treated the vulcanized red rubber, of different manufacturers, with chemically pure nitric acid, allowing it to stand for several days, then filtering and evaporating, leaving it, however, slightly acidulated. He had then tried the effect of this residue upon polished copper, and had found that the characteristic white spot remained upon the copper, showing the presence of free mercury. This is considered the best test. This test was also made before the association, and resulted as above. The whalebone rubber also presented the white stain, but not in so marked a degree as the others. He was satisfied, from this test, that there was a minute portion of free mercury in the vulcanized red rubber. He also exhibited several specimens of vulcanized rubber under the microscope, in all of which, upon careful examination, globules of mercury could be seen. He said a little care was required to distinguish the globules of mercury from the crystals of sulphur, always present—the former presenting a bright metallic lustre.

"Dr. Buckingham asked if, after treating the sulphide of mercury with nitric acid, the same result was produced.

"Dr. Wildman, in reply, stated that he had treated the sulphide of

mercury, also, with pure nitric acid, and tested it upon the polished copper, but without other effect than the action of the nitric acid upon the copper. No white stain remained.

"Dr. Buckingham said two questions presented themselves, namely, whether the sulphide of mercury used to color the rubber was pure, or contained some free mercury, or whether it was decomposed at the temperature at which the rubber was vulcanized. The books say it is not decomposed at a much less temperature than 600° F. He had no doubt it was decomposed. He doubted if there were sufficient free mercury in it to produce any effect, either local or constitutional He did not think the free mercury, if present, could get out of the rubber. That on the surface would soon be either dissolved or volatilized. It may be injurious in certain cases, but it was not proven that it is injurious in all. There was no doubt in his mind that the vulcanized rubber contained some free mercury. He thought some rubber contained inferior vermilion. Rubber plates, worn in the mouth, change in a few years, either by time or the action of the saliva, or in some manner not known. They also change when kept on hand for a long time, but not in use. The secretions of the mouth get in between the teeth and the rubber, and the gases formed may act upon the free mercury in the rubber He believed vulcanite rubber as a base for artificial teeth to be a bad thing in most cases.

"Dr. Wildman stated that he had experimented with the Hard Rubber Co.'s rubber, vulcanized at 280° F., and found the same condition to exist, *i.e.* the slight decomposition of the sulphide of mercury. A specimen of this Company's rubber, vulcanized at 280° F., was exhibited under the microscope, showing globules of mercury."

American Journal of Dental Science.

From the Report on Operative Dentistry, read before the Southern Dental Association, by Dr. W. H. Morgan, we quote:

"The next subject I would call your attention to is the operation of capping the pulp, and thus attempting to preserve its vitality after exposure.

"The most popular and successful treatment is the covering with *os-artificiel*, and then filling it over with gold, after cutting away a sufficient portion of the *os-artificiel* to enable the operator to make a good filling. This mode of practice has been adopted by many, after long years of experiment, in which every conceivable plan has been adopted to quiet this very sensitive, and, after exposure, intractable organ. Arching with gold foil, caping with gold plate, tin, lead, horn, wood, gutta-percha, asbestos, oiled silk, vulcanite, risodontrophy, etc., have all had their day and trial, running through a series of years. Each one of these has had its advocates, and all has been claimed for them that we could desire; but, alas! they have each failed us in the hour of need, and for the want of higher attainments in knowledge and skill, we have been forced to sacrifice those valuable organs, and thus maim our patients for life. We trust a better and brighter day has dawned upon us, and that henceforth we will, by the aid of *os-artificiel*, be able to save where we were compelled to destroy. I cannot say to whom the honor belongs of first using this material for this purpose. My attention was first called to

it by our president in the summer of 1867. Since that time I have used it with the greatest satisfaction and success, rarely having any untoward effects following its use. It has been used by covering oiled or other silk or linen with it at about the consistency of thin cream, so that it would permeate the cloth, and then placing a small bit of the material thus prepared immediately over the exposed part of pulp, and then proceeding to fill the entire cavity with the *os-artificiel*, and, after hardening, removing a portion and filling with gold. Others following the example of our president, cover the exposure with collodion applied with a camel's-hair pencil, and then fill. I would recommend the following mode of procedure: After thoroughly cleansing and otherwise preparing the cavity, with very delicate drills, I cut small retaining-points as near the pulp as my judgment will permit me to approach, remove all foreign matter, wipe out with carbolic acid, dry with cotton or spunk, and put immediately upon the exposed point a small amount of *os-artificiel*, in a very soft state, just sufficiently consistent to enable me to handle it; take up the superabundance of chloride of zinc with tissue-paper, and then permit it to set for a few minutes. I then proceed to fill the entire cavity with the same material, as stiff as I can use it, over which I flow a little beeswax to protect it from moisture, and let all remain until it sets properly. I prefer, if I can do so, to retain my patient a short time; thirty minutes is often sufficient; then remove a portion of my filling; fill with gold,—thus completing the operation at a single sitting. I would not say that this was always advisable, for in some cases the cavity is so shallow, and, as a consequence, the amount of *os-artificiel* to be left is so small, that it is desirable it should get as hard as possible before cutting away any portion, for fear of disturbing or removing that in contact with the pulp.

"Such has been my success by this mode of practice that I think one who does not try to preserve the vitality of exposed pulps, by the use of *os-artificiel*, a sinner above all other men."

Missouri Dental Journal.

Dr. P. C. Branch reports the following "Case in Practice":

"Mrs. K., aged about forty-five, presented herself for examination. She had for two or three years suffered a great deal from engorgement of the antrum. Had been frequently temporarily relieved by lancing through the roof of the mouth—at first employing a physician, and afterward doing it herself 'to save expense.'

"Four months before coming to me she had consulted a dentist, who recommended the extraction of her teeth, and commenced the operation, but (according to the patient's statement) was compelled to desist, after removing the incisors and bicuspids, on account of excessive hemorrhage, which he *failed* to arrest by dusting the mouth with dry tannic acid, but which came very near strangling the patient by its powerful stringent effects upon the muscles of the pharynx.

"After this splendid *coup de dentist*, he dismissed her without attempting to treat or prescribe for the engorgement. I found the socket of the right lateral incisor open, and an elastic probe passed through it into the antrum, and back to a point opposite the first great molar, and a little to the right of the centre of the palatal arch.

Pressure applied there and directed forward, forced half a teaspoonful of extremely offensive matter through the socket of the above-mentioned lateral. The cuspidati were sound and in their places. But their necks were denuded and their alveoli pushed outward and forward in a very unsightly manner, indicating considerable exostosis of their roots. Indeed, all the living teeth in the mouth presented similar indications.

"*Treatment.*—Extracted the teeth and roots. A few dead roots were partially absorbed, but the others were both enlarged and elongated—some of them enormously.

"Prepared an elastic probe, wound it with raw cotton, commencing at its (bulb) extremity, and winding spirally along the shaft to a point that would be external to the opening when the probe was introduced as far as it would go. Saturated the cotton with dilute carbolic acid, and probed the cavity thoroughly, pressing the extruding cotton firmly against the shaft of the probe, to prevent its being left behind when withdrawing the probe.

"Instructed the patient in the method of probing as above, and, after giving her a probe and the dilute acid, dismissed her, with the request that she would call on me when she came in town again. (She lives ten miles away, and is a poor widow, dependent upon her neighbors for a chance to ride.) She called about a week afterward, and reported pain all gone, discharge diminishing, and no longer offensive. Made no change in the treatment, except to probe less frequent. Have seen her three times since; the last time, four weeks ago, no pain, no discharge, socket closed up, and the engorgement cured, and general health much improved.

"I venture to send you this, because I believe that where it is practicable the probe treatment is more efficient than the common practice of injecting remedies into the diseased cavity."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

A MEETING was held at the Philadelphia Dental College, Wednesday, February 1, 1871. President in the chair. Several valuable donations to the museum from Drs. Dickey, Perkins, Stellwagen, Stansfeld, and Barrows, were shown and described.

Prof. McQuillen had the pleasure of exhibiting to the members a beautifully-mounted specimen of an armadillo, from his friend, Dr. J. F. Vegas, of Bahia, Brazil. To those present not familiar with the characteristics of this animal, he would briefly state that it belongs to the order *Edentata*, so named on account of the absence of incisive teeth. The name armadillo was given by the Spaniards on account of the hard shell or armor surrounding it. As could be seen, this covering is divided into a number of compartments, one forming a shield over the forehead, another over the shoulders, and a third on the hips,

and between the two latter nine parallel and movable bands, which allow the body to bend, and enable the creature to roll itself up into a ball, if necessary, which it sometimes does, as a means of defense from its enemies. It subsists on vegetables and insects, but mainly on the latter, which it pursues on or beneath the surface of the earth; the fossorial claws enabling it to readily burrow under the earth. Dr. Vegas had also forwarded a very singular insect, called the horned beetle, an immense horn projecting from its head. This specimen was exhibited to the members.

Dr. Kingsbury, in response to a call for some remarks, stated that he could not refrain from congratulating the society with respect to the various contributions to its museum. The pathological specimens presented this evening were of an interesting character, and indicated in a marked degree a desire on the part of the profession to aid in making the museum what it is our desire to make it—the finest collection of specimens in dental pathology to be found in any country. He expressed a hope that due encouragement would be given by the members of the society to the profession generally to feel the claims of science and to continue and increase their contributions thereto.

The specimens of exostosis presented called to mind an interesting case of this disease that occurred in his own practice recently. The patient, a middle-aged lady, who had been an invalid, and a great sufferer for some years, called on him to have a number of teeth extracted from the inferior maxilla, with the intention of having an artificial denture. The tooth he first attempted to extract was the left second bicuspid. He had no sooner grasped the tooth with the forceps and given it the proper and usual outward and inward movements and traction, than he became fully convinced that he had hold of one of those badly exostosed teeth with which we occasionally meet, and which render the operation of extraction exceedingly difficult, not to say impossible. You are doubtless well aware that in some cases of exostosis the enlargement is confined to the extremity of the root, and gives it a bulbous form. In such cases, where there is no corresponding enlargement of the alveolus around the neck of the tooth, and where the osseous structure is hard and unyielding, as in the case of persons of mature age, fracture of the tooth or the alveolar process is apt to occur. He loosened the tooth and raised it some three or four lines out of the alveolus. Yet with all the force that he felt it safe to apply, and continued as long as would be necessary to extract a dozen ordinary teeth, he was not able to remove the tooth. Voluntarily he relinquished the grasp of the forceps, feeling that his patient had endured the persistent effort with heroic courage. He extracted the other teeth with but little difficulty with the exception of the corresponding bicuspid on the right

side. As a general rule, it is, for obvious reasons, advisable to complete the extraction of a tooth at one and the same sitting when it has been commenced. But in such a case as this, if the operation be delayed for a few days, the changes that take place in the osseous structure surrounding the tooth, in consequence of the inflammation following the loosening of the tooth, even though it may not be of a suppurative character, will render the second effort at extraction comparatively easy. And so it was in this case. Some five or six days afterward, he extracted the tooth without any difficulty. With all his reluctance to postpone the operation for a few days, the final result was much more satisfactory than the fracture of the tooth, which would have been almost certain had he persisted in his first effort at extraction.

Teeth of this peculiar formation, resulting from a diseased condition of the alveolar dental membranes, not only constitute some of the most troublesome cases in extraction, but afford an interesting subject for pathological inquiry. He would present the tooth to the society as a rare specimen when considered in all its relations.

Prof. Stellwagen. Sending patients away in cases of exostosis such as Prof. Kingsbury has spoken of is very dangerous, especially to the young practitioner, for the patient would leave with the impression that the operator had failed from want of ability, and being annoyed for a few days with it, would very likely go to some one else, who would perform the operation without difficulty. He advised, under such circumstances, putting a wire or gilling-twine ligature, or a piece of rubber tubing, around the neck of the tooth, to facilitate the extraction, by causing the absorption of the tissues holding the tooth in its position.

Prof. McQuillen. In connection with the remarks on the extraction of exostosed teeth, he would cite what he regarded as an interesting case in practice. Some ten or twelve years ago he had removed for a patient, Mr. Y., the pulp from the right superior first molar ; the cavity of decay was on the posterior approximal surface, and was quite large, extending up to the neck of the tooth. A large gold filling was introduced, which had served a useful purpose during the intermediate time. Examining the patient's teeth the other day, on his return from Europe, it became quite evident that decay had commenced above the neck of this tooth, and had isolated the palatine fang from the crown ; considering that the tooth had rendered valuable service in the past,—and as its integrity was now so much affected as to be of little value for the future,—it was decided to extract it. This was done by Dr. Thomas under the influence of nitrous oxide, and the diagnosis proved correct, the palatine root being separated from the rest of the teeth ; the large filling which had been introduced many years before was in a perfect condition. The tooth was exhibited to the members.

SUSQUEHANNA DENTAL ASSOCIATION.

A session of this association was held at Selin's Grove, Pa., Nov. 16, 1870, and was well attended, a large number of members and visitors being present.

Drs. A. S. Rhoads and H. J. Richards, of Williamsport, were admitted as members.

Dr. H. W. Bessac read an essay on the "Discoloration of the Teeth, the Cause, and Means of Bleaching the same."

He said the discoloration of teeth, the cause of that change, the best method of bleaching the same, were subjects that occasionally gave the dentist a large amount of trouble and anxiety. When we come to investigate the subject, we find it almost entirely unnoticed in the text-books; but the fact that we occasionally see teeth of a dark, unnatural color brings the subject properly before us.

It had been his good fortune to see a very limited number, two or three at most. One only of that number was badly discolored. The origin of this discoloration is probably attributable to the death of the pulp of the tooth, and the change produced by the disintegration of the blood contained in the pulp. The blood becomes thin, percolating through the interstices of the tooth, producing the unsightly appearance. There are no means for the blood to be taken up in the circulation, and it remains there, an eyesore to the patient as well as the dentist.

When speaking of having seen but few cases of discoloration, he did not wish to be understood to say that he had seen no more dark-colored teeth, but cases of recent occurrence, and to be traced to some not remote cause; thought but little could be done to remove the dark color from a tooth that had been in that condition for a long period of time.

Bleaching may, in some measure, remove the dark shade, but a perfect restoration cannot reasonably be expected.

He had a patient some years since, fourteen years of age, where the central incisor, after having been filled, turned a very light pink; saw the tooth a number of times; the color was gradually fading away; then lost sight of it, and had not learned what the final result was.

Another case, central incisor, after having been filled, caused the patient considerable pain; the pain growing more acute, then violent, and finally the tooth turned very dark-colored. Did not see the patient until this change had taken place; was astonished and mortified, and hardly knew what to do in the case. Removed the gold, opened into the nerve cavity, and syringed it with soda-water; plugged the nerve canal with pellets of cotton, and introduced Labarraque's solution by saturating a

pellet of cotton in the liquid; placed it in the tooth, and then sealed it up with wax and allowed it to remain some thirty minutes; then removed it, and rinsed well with soda-water.

He used the chloride of lime in the same manner, with the exception of moistening the lime in acetic acid of about the strength of common vinegar.

After using either article, he filled the cavity with cotton, and waited another week; it would have been better, perhaps, to have continued the treatment daily until the desired effect was produced; had but little doubt that if he had a similar case, and could commence operations immediately upon the beginning of the discoloration, he could entirely remove the difficulty.

Remarks were made on it by members generally.

Dr. Wingate uses chloride of lime, and gives it universal preference.

Dr. Rhoads thinks a badly discolored tooth can never be restored to its natural color in any way.

Dr. Williams cuts away all decay, saturates with carbolic acid, and in a manner restores teeth to their original shade, though not perfectly so.

Dr. Sticker uses chloride of lime, but never succeeds well. Has long ago given up trying to bleach teeth.

The "Best Material for Filling Teeth" was discussed.

Dr. Beck thinks the only material fit to use is pure gold, and gives the go-by to all others.

Dr. Gerhart acknowledges gold the best, but thinks there are other materials admissible under certain conditions; thinks tin foil and os-artificiel useful occasionally.

Dr. Barrett, while putting gold first on the list, uses in some cases tin, and thinks well of some of the preparations of zinc; has used for a few months past Guillois' cement, and thus far likes it. It wears well, and is little affected by saliva.

Dr. Burlan favors gold only for filling human teeth.

Dr. Beck spoke highly of rubber dam.

The subject of "Dental Education" was taken up.

The members generally spoke, all of them earnestly indorsing the effort to elevate the profession through associations, journals, colleges, and the fullest and freest interchange upon all questions of theory and practice.

A liberal education as the basis of professional training was warmly urged upon all who contemplate devoting themselves to the practice of dentistry.

The officers of this association, elected in May last, are:

President.—Dr. John D. Wingate.

Vice-President.—Dr. H. H. Martin.
Recording Secretary.—Dr. J. M. Barrett.
Corresponding Secretary.—M. D. L. Dodson,
Librarian.—Dr. H. W. Bessac.
Treasurer.—Dr. H. Gerhart.
Executive Committee.—Drs. C. S. Beck, G. M. Renn, and D. Dieffenbacher.

Adjourned to meet at Wilkesbarre, Pa., May 10, 1871.

J. M. BARRETT, *Secretary.*

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

IRREGULAR DENTITION.

I NEXT show you a girl, fifteen years of age, who comes to us with an irregular, uneven superior dental arch; and as it illustrates some of the anomalies of dentition, I bring the case before you. We look at her upper jaw, and perceive that she has sixteen teeth,—eight upon either side of the centre. Now she is only fifteen years old, at which age you know that the ten deciduous teeth should have all been replaced by permanent teeth; yet the third molars or wisdom teeth should not have appeared. Her complete set upon the upper jaw, at present, would therefore be fourteen. I find that there are here three molars upon each side; yet there is a space still remaining behind these, in the normal position of the wisdom teeth, and I am therefore confident that these are still to erupt, which would give her eighteen in the arch. Whence these three molars? I examine them carefully. The posterior one is evidently the normal second molar, and its next neighbor is the ordinary first molar; yet between this and the bicuspids is an intruder, upon either side. What is it?

Supernumerary teeth are, as a rule, doubly conoidal; but this is not so. It is, however, small and diminutive, and presents every appearance of a milk tooth,—the second molar; and such in truth it is, remaining here at the fifteenth year, whereas it should have dropped out at the tenth,—its fangs not having been absorbed, from some reason unknown to us. Now, fortunately, there has been sufficient room in her arch to accommodate this retention, and the teeth are but moderately displaced; yet, suppose that it had been impossible for the permanent teeth to have crowded their way into the arch, they must have been compelled to make alveoli for themselves, and would probably have

emerged posteriorly to the deciduous at some point in the roof of the mouth, or might have formed an odontocele. This condition of odontocele is one we will frequently remark when we find a deciduous tooth in the place of a permanent one; and, in fact, we should bear this relation in mind in all dentigerous cysts, for they are often found in connection also with supernumerary teeth. In its relation to these osteo-dental, or dentigerous tumors, or odontoceles, or compound cysts, as they are variously called, this case is especially interesting to us, since the presence of those teeth might have readily resulted in the formation of such a tumor.

The most common position for such tumors is in the region of the palatine processes of the superior maxilla. Yet I remember one case in which I found such an encysted tooth with its apex in immediate relation with the floor of the orbit. Your diagnosis will rest mainly on their position and on their size; but in cases of obscurity you could easily settle the question by an exploring needle, which will reveal, at least to an experienced touch, the presence or absence of tooth structure. The contents of these tumors or compound cysts sometimes consist of undeveloped, but more commonly of supernumerary, teeth. The presence of these supernumerary teeth in such a position is interesting also to us in a physiological as well as a surgical point of view, for as they are not necessarily a dermatic production, the appearance of these in the mouth is as unaccountable as is their association with ovarian or other remote tumors.

In the present instance, however, these deciduous teeth are nearly in position, as are also all the permanent, so that we have but to afford a little more room in the arch by the simple extraction of these offending bodies, thus allowing the remaining ones to fall into their normal places. An encysted tooth germ, as could readily be inferred, may heterogeneously develop; that is, there may be such a transposition of the dental elements that the microscope can alone individualize them.

A famous case of this kind I have reported in my work on Oral Surgery, where the son of a banker, as the result of encystment of the germs of two of the molar teeth, had a tumor form in his lower jaw, which never was diagnosed until after a resection of the bone, when the microscope demonstrated it to be dentigerous. Anomalies of dentition should claim from you considerable attention.

Necrosis and Caries.

The four cases now sitting before you are all instances of a destructive inflammation of the maxillary bones, resulting in the death of a portion of their substance;—they are instances of caries and necrosis.

Now, what are caries and necrosis? Caries in bone is analogous to ulceration in tissue; necrosis, to mortification. One is death, slight in degree and limited in extent; the other, extreme, extensive, and complete.

They are both the result of inflammation, an ostitis, which may be provoked in various ways, but is very commonly, in the maxillary bones, the result of periodontitis. Ostitis does not, of course, always end in caries or necrosis any more than does inflammation in the soft parts end in ulceration; yet in certain conditions of constitution, especially in struma, such a result may occur. Caries of the maxillary bones, especially of the lower, is comparatively rarely found, yet these cases will occasionally come to your notice. I have spoken to you of alveolar abscess as a cause, and you see how often I bring up this subject in my lectures, to impress more forcibly upon your minds that it is a disease which is extremely common. Look at the skull I hold in my hand, and all along this alveolar process, just against the extremities of the fangs of the teeth, you will see little openings, which look as though the bone had been perforated; and so it has, but not by an instrument. These openings are all the result of alveolar abscesses, and I have no doubt that many of you have precisely similar ones in your jaws. Remember, then, to pay careful attention to these periodontal troubles, and do not let your patient suffer from either caries or necrosis, with their accompanying sinus-riddled faces, the scars of which will ever remind you of your ignorance or culpable neglect.

Caries may arise occasionally directly from ostitis, the result of injury; but periodontitis is much more commonly the first recognizable symptom, as well as the cause, and should be combated in its acute stages, as shown in a previous lecture (reported in DENTAL COSMOS, October, 1870), since by a failure to thus vigorously treat it, I have seen extreme complications occur.

But suppose, as often happens, that you have not been called to the case until all this mischief has been done; you will then find your patient somewhat like this little girl:

Case I.—Who, as you will see, has the orifice of a sinus, discharging pus at the base of her jaw. The parts about are red, indurated, and excoriated, and she has been in this condition for months. Her trouble, she informs me, and, as I anticipated, commenced in a "toothache," and the sinus soon followed. I pass the probe, and what do I feel? Bone; not smooth, and covered with periosteum, but soft, riddled, easily breaking down,—very much like old honey-comb. Now I know that this is not simply uncomplicated alveolar abscess. I am sure that in its progress the inflammation extended to the bone structure, and caries has been the result.

This little girl is pale and delicate, presenting that general appearance which we call strumous, and this circumstance has undoubtedly been largely instrumental in bringing about such an unfortunate state of things.

When will the day come, gentlemen, that you and I shall be able to speak intelligently of the taint "scrofula;"—to define its meaning; to discover its cause; to trace its course; and, best of all, to grapple with and overpower it? I cannot stop here to discuss the question as to the consanguinity of the conditions, syphilis, scrofula, tubercle, etc.; but this much we know, that the loose, spongy structure of the bones of strumous patients, as evidenced in the frequent diseases of the bones about the joints, predisposes to the condition of caries whenever local or other causes lend their assistance. Of course I speak in a general way, for not every scrofulous patient will have caries, while many a strong, robust person may be so afflicted.

Constitutional causes are certainly far more powerful in the production of caries than are local injuries; for injuries are common, while cases of caries are comparatively rare.

The slowness or rapidity of this disease is greatly influenced by various individual conditions, being, for instance, quite rapid during the process of dentition, as also in mercurially weakened bones, where it seems almost but a simple mechanical disintegration; while again, it seems, at times, to be but a semi-fatty degeneration, the animal portion of the bone becoming soft and greasy.

Many contend that tubercle is present at any and all points of the manifestation of caries; but although, as I have already said, such a relationship does often exist, as in the girl before us, yet it is not always present.

Now, I do not think that the disease is very extensive in the case before us, yet it is impossible to determine that question precisely, since there is no abrupt line of demarkation, as in necrosis, but rather a gradual fading out, or shading out, of the diseased into the healthy structure.

Having, then, a case of caries, we proceed to treat it.

This has now passed the acute inflammatory stage, so that cathartics, diaphoretics, leeches, etc. would be only productive of injury. We have, therefore, to treat it in its chronicity, and this we shall do by iron, quinia, beef, cod-liver oil, etc., together with a local stimulating injection, consisting of tinct. iod., and tinct. capsic. co., thrown in once in two or three days, which will assist in the rapidity of the cure.

This will be our course for a short time, while we carefully watch whether Nature is herself competent, with this assistance, to repair the difficulty; but, failing in this, we shall then cut down through the

tract of the fistula, and remove all the diseased bone. The tooth-roots, the original cause, have already been removed, so that we have now no inconvenience from that source.

In removing the diseased bone we always use the chisel, and with this instrument you will soon acquire the delicacy of touch that will enable you to detect the instant that healthy bone is reached, by its hard, springy character, while carious bone is soft and brittle, and presents to the sight a dark, deadish-white, or oleaginous appearance, instead of being white and vascular.

All the softened bone should be removed; the hemorrhage will seldom be severe; in fact, simple alum-water is sufficient, as a general thing, for its control, even, indeed, if this is required.

Such will be our treatment, and you shall watch the case with me and thus know the result.

Case II.—This old woman, sixty-five years of age, has been suffering for months from a continued discharge of pus into the mouth, and from a tumor in the roof of that cavity, which has been variously diagnosed, and is giving her much alarm. As you look into her mouth you see this tumor projecting from its roof, and occupying nearly the whole of the right side, being of the size of an immense peanut shell. The gums are red and swollen, and pus is exuding from about the necks of numerous decayed fangs which occupy the upper jaw. The tumor itself is hard, yet, upon firm pressure, it yields, and I am sure that it contains pus, a fact which I can easily make apparent to you by this exploring needle.

This trouble has existed for a year, and has evidently for its history the usual one of alveolar abscess; but this abscess, from some cause, did not break into the mouth, as it should have done, but worked its way along this palatal plate of the superior maxilla, dissecting up the periosteum, and is now pointing here. In its course it has also done more than merely force a passage along this bone, for it has developed an ostitis, which has resulted in the death of the bone, and we now have quite extensive necrosis.

I pass a bistoury into this tumor, and you see the instantaneous discharge of pus, which is horribly offensive, characteristic of necrosis. The probe shows the bone to be denuded and dead, feeling like a piece of hard wood or lead.

Now the cause of all this trouble is evidently situated in these old fangs, some six or eight in number, and all of these we shall extract, thus fulfilling a primary indication of every case, the removal of all causes; and while we thus rid ourselves of their prejudicial effect, we also give more free vent to the pus.

I am sure that the sequestrum has not yet separated, and we must

therefore wait until Nature shall have cast off this mass, which she will do by forming a line of demarkation between the diseased and healthy structures.

Must we wait, however, for this slow and tedious process? Yes: we cannot hasten it greatly. I might, however, by the way, embrace the opportunity of a peculiar fitness on the part of this case to test the merits of the acid application. Certain English surgeons, among them Mr. Pollock, aver, and they are well indorsed by gentlemen on this side of the water, that the cure of these cases is expedited, and much more satisfactory results are secured, by dissolving out the inorganic constituents of the parts—just, indeed, as you have so often seen done by the anatomist—taking away the earthy, and leaving the animal portion. I will dilute sulphuric acid with six proportions of water, and, making a daily application, you can see the result for yourself.

Necrosis of the superior maxilla bones is far less common than that of the inferior, and although it is more liable to take on general inflammation, yet its higher vascularity and susceptibility enable it to resist the destructive action and limit the part overwhelmed, so that it is seldom affected in its entirety.

In the case before us, I judge that a large portion of the right palatal plate, as well as the alveolar process, will separate. Sometimes the necrosis only affects the alveolar border by itself, being often, in such cases, the result of a local irritant other than an inflammation of the alveolo-dental periosteum, as, for instance, from the use of arsenic, chloride of zinc, etc. in destroying the pulps of teeth, such paste having oozed down around the necks of the fangs, and developed a severe inflammation, ending in the death of the process, but this is limited in extent and short in its duration, a single week being often sufficient for its separation.

The separation of a bone-slough in any position is a long and tedious process, requiring patience for the surgeon and unlimited faith on the part of the patient, especially since the case may seem (superficially viewed) to be steadily growing worse.

It will often be fortunate for your reputation that these cases do not come to you until the sequestrum has already separated, and is lying cooped up in the tissues (that is, provided you cannot have seen them in the first stage), since few patients have the resolute determination and abiding faith to resist the constant discouragements of appearances and friends who will clamor that "something shall be done;" and I have usually found it true that those who know the least, advise the most.

We must always pay careful attention to supporting the constitution of the affected person, else repair and separation will not go on; and

we shall therefore administer the best of food and tonics to this old woman.

When it is seen that death of the body of a bone is certain, especially in the inferior maxilla, it will be found of all advantage to endeavor to have the dying bone replaced by new structure, precisely as new bone is formed around a necrosed tibia. To accomplish this we slowly enucleate the periosteum—the bone-forming structure—by means of small tents of cotton or sponge introduced between it and the dying bone, which by their expansion slowly strip it away, and hasten the death of the old part, beside saving the valuable periosteum. In this manner we can sometimes, but not always, envelop the bone with a new growth and prevent deformity.

When the periosteum is indisposed to form such new bone, it may be favorably stimulated by tincture of iodine, with a small addition of creasote, especial attention being given at the same time to insure cleanliness and disinfection. Weak injections of potass. permang., gr. iii to f℥ water, will answer nicely.

Even should these fail, and the progress be slow and tedious, do not let your impatience overcome your better judgment, but continue to wait, for I have found from actual experience that all operative interference in cases of maxillary necrosis is only productive of harm, and especially is this true of phosphor-necrosis, of which I shall speak upon some future occasion.

Case III.—This woman presents a pouting, red, teat-like prominence beneath the base of the lower jaw, with an opening in its centre, which is so characteristic, that any one of you would at once say there was dead bone beneath. From this teat is a constant discharge of pus, and although my probe, passed through the sinus, reveals dead bone, yet it is not a detached sequestrum, and we must here also wait for the detachment of the slough.

It is somewhat singular, notwithstanding the immense amount of material applying at this clinic, that it should so often happen that a number of almost similar cases should be found upon a single day; yet such is often the case, as you have frequently to notice both in my service and in that of Prof. Agnew. Upon a former occasion I showed you a number of cases of necrosis (*vide* DENTAL COSMOS, January, 1871), in all of which the sequestræ had already separated and were removed by cutting down upon them through the sinus or at the gums, yet in the cases to-day not one of them is ready for operation.

Case IV.—Here is also a case of necrosis, but of long standing, which is not due to alveolar abscess, as were all the preceding ones, but to a fracture of the jaw inflicted some four years since. The fragments united, but a portion of the bone died, and was finally removed by op-

eration; yet this did not cure her trouble, for, from some unknown cause, portions of bone still continued to necrose and keep up a constant discharge. Several fragments have been removed at various times, and she presents numerous scars along the base of her jaw; but there is still more bone to come away, and we can only hasten it by the occasional use of the stimulating injection, of which I have spoken, the tinct. iodine and tinct. capsic. comp., equal parts.

One important part of the treatment, however, we must not neglect. This constant tendency to death of the bone shows that there is a constitutional fault lying behind this disease, and, if I mistake not her appearance, she is tainted with that dire disease, syphilis.

How shall we dose her? with the routinist's iodide of potassa and corrosive sublimate? She is pallid, feeble, and anæmic to the extreme, and such a course would but still further reduce her already poor blood. No; let us try to give her good red corpuscles; and then, the nutrient material being rich, produce healthy action in the bone, and give nature the mastery. I think, then, that the syr. ferri iodid. will be far better for her present condition, which, while it is alterative, it is also tonic in its character. We will commence with ten drops three times daily, and increase to fifteen if the stomach does not become intolerant, and it would not be amiss to add a few drops of liq. potass. arsenitis to each dose.

Of course her hygienic circumstances are unfavorable, yet we will try to place her in the best condition possible, and order as good food as her means will permit her to purchase. Cod-liver oil will add greatly to her nutrition; in fact, in this weak, feeble stage of syphilitic necrosis, I may say that it is a far better "specific" than is potass. iodid. With these measures I trust that we shall be able to limit this unhealthy action and compel it to be cast off, leaving behind a healthy bone.

Case III. will be treated with the same stimulating injection.

EDITORIAL.

PAIN IN A TOOTH FROM A DISCHARGE OF ELECTRICITY.

Every one is familiar with the fact that a person highly charged with electricity, induced by moving over a carpet in the stocking feet, can readily ignite the carburetted hydrogen escaping from a gas jet. Over and over again this experiment has been tried with success. I am not aware, however, that any one has noticed a fact which has recently attracted my attention, that a person thus charged with elec-

tricity will frequently cause sharp pain in another by lightly touching a tooth. In operating for a lady a short time since, she complained upon my touching with the index finger the left superior lateral incisor lightly, that it caused her a great deal of pain. The tooth, upon examination, was found to be entirely free from caries, but slightly worn by attrition of the lower teeth on the cutting edge. At first I could not account for this painful sensation; had my hand been cold I should have attributed it to the rapid abstraction of caloric from the tooth. I was operating, however, in a warm room, and my hand was of the ordinary temperature of the body. Having occasion to pass from the patient to another portion of the room, I found, upon returning to her and touching the tooth again, that the same sensation of pain was experienced by her. Being in the habit of wearing thin slippers in my office, and moving lightly over the floor, I became convinced that the pain was due to the fact that I was surcharged with electricity, which was discharged by me on touching the tooth of the patient. On several occasions since that I have tried the experiment upon a number of patients, with the same result—pain in the tooth. As an illustration of the tendency to the accumulation of electricity in my organization, I have noticed invariably, upon the removal of the silk shirt worn next to my body, especially on a cold night and in a dark room, the flashing and snapping of electric sparks. Others who are in the habit of wearing silk next the skin can no doubt recall similar experiences.

I have thought it worth while to direct attention to this fact, as it may aid others in forming a correct diagnosis of pain under similar circumstances. J. H. McQ.

SELECTIONS.

NEURALGIA OF THE JAW-BONES.

Prof. Gross says: "There is a form of neuralgia of the jaw-bones which, as far as my information extends, has not hitherto been described. Its seat is in the remnants of the alveolar process of edentulous persons, or in the structure, and in the overlying gum, and is met with chiefly, if not exclusively, in elderly subjects. It is more common in the upper than in the lower jaw. The part affected is usually very small, often not exceeding a few lines in extent. The soft tissues around do not seem to suffer, at least not in the same degree; on the contrary, the morbid action is generally limited to the osseous structure. In rare instances there may possibly be some involvement of the gum, which is nearly always exceedingly hard and dense, grating more or less under the knife, and adhering with extraordinary firmness to the atrophied alveolar process beneath. The pain is generally paroxysmal, coming on in fits and starts, very much as in ordinary neuralgia, the slightest causes being sufficient to provoke it, as talking, mastication, the contact

of hot or cold fluids, deglutition, or mental excitement. Sometimes it is momentary, coming and going with the rapidity of lightning; occasionally it lasts for hours together; and cases occur, although they are rare, in which it continues, with but little mitigation, for an indefinite period. The pain varies in character: thus it may be sharp and darting, dull, heavy, aching, boring, or gnawing. Pressure generally relieves rather than aggravates it. Now and then, when it is uncommonly severe, there may be more or less spasm of the muscles of the face, but this is rare. The pathology of the affection seems to be compression of the minute nerves distributed through the wasted alveolar process, dependent upon the encroachments of osseous matter upon the walls of the canals in which they are naturally inclosed. The disease usually comes on gradually, and proceeds from bad to worse, until, in many cases, the suffering is rendered nearly intolerable. The only effectual remedy is excision of the affected alveolar process. No particular attention need be bestowed upon the after-treatment. A mild course of chalybeate tonics may be required when the patient is anæmic, or affected with flatulence and indigestion."—*Amer. Jour. Med. Science.*

EXCISION OF TONSIL, FOLLOWED BY HEMORRHAGE.

BY WHARTON P. HOOD, M.D.

THREE years ago I excised the left tonsil of a gentleman who had complained for some time of the inconvenience produced by its redundancy. The only unusual feature about the operation was this, that after I had cut through the upper half of the tonsil the farther passage of the bistoury was barred, so to speak, by some hard substance. I made more pressure with the knife, and still could not continue my cutting. I then pulled strongly on the portion of tonsil held by the forceps, and feeling something slip from under the knife, found that the obstacle was removed, and the excision was easily completed.

On examining the portion of tonsil removed, I saw that the cause of my difficulty arose from a small calculus, about a quarter of an inch in length, milk-white in color, round and rough in shape—in fact, exactly resembling one of those sugar-plums, containing a coriander-seed, used as padding to a box of the larger sorts of French bonbons. One-half of its length protruded from the mass in the forceps, and the cavity in which it had lain was plainly visible in the remaining portion of the tonsil.

As a rule, gargling the throat with cold water is sufficient to check hemorrhage after excision; but in this case it lasted for several hours, notwithstanding the application of a variety of styptics, such as solid nitrate of silver, ice, perchloride of iron, etc., and I began to feel rather uncomfortable as to the result. Suddenly the patient said, "I feel very sick;" and sick he was to a very considerable extent, vomiting large quantities of partially-digested food and coagulated blood.

When the sickness had ceased, I fully expected to have an increase of the bleeding, and looked rather anxiously into the mouth at the cut surface; but my surprise was both great and agreeable when I found that the cavity in the tonsil had disappeared, and, instead of an increase,

a complete arrest of the hemorrhage had taken place. I remained with the patient for some time, expecting that the stoppage was only temporary, but was very pleased to find that it was permanent.

A short time ago I was sent for to a patient in whose case both tonsils had been excised. The operation had been done at 1 P.M.; and when I saw him at 5 P.M. I learned that slight bleeding had continued until about 3 P.M., and after taking some food it had increased to such an extent as to alarm him. I tried varied styptics for a short time without any controlling effect. Recollecting the effect of vomiting in my previous case, I determined to give him an emetic. I gave him a scruple of sulphate of zinc in a little water. He was not sick for a quarter of an hour; at the end of that time he brought up little else than blood and water (he had sucked a good deal of ice). He retched for a short time after the stomach was emptied, and when the retching had passed off I examined the throat, and saw that the bleeding had stopped, as in the first case.

I am well aware that the result of a particular plan of treatment, tried in only one case, does not justify much faith being placed in its future success; but as I hope it will not fall to my lot to have any more exceptional cases of this description,—for hemorrhage after excision of the tonsil is exceptional, in my experience occurring twice in forty cases,—I call the attention of others to the use of an emetic under these circumstances, so that its efficacy may be tested when opportunity offers.

I presume that the hemorrhage is checked in these cases by purely mechanical action, viz., pressure of the pillars of the fauces and the surrounding muscles on the tonsils. The closing up of the hole in the tonsil in the first case is, I think, a fair proof of the amount of pressure exerted. I believe emetics of ipecacuanha have been found useful in post-partum hemorrhage.—*London Lancet.*

HYGIENIC TREATMENT OF DISEASE.

SIDE by side with the use of medicine, and not second to it, is the so-called hygienic treatment of disease—the study and regulation of the vital forces. The influence that the physician exercises over the mind, and through the mind, over the body; the soothing or the stimulation of the nervous power; the calming of exaltation or the stirring up of apathy; the quieting of the over-busy brain or the spurring of the flagging will; the repose of over-used powers or the awaking of suspended vital functions; the subduing of the over-sensitive skin or the stimulating of it where wan, muddy, and lifeless; the limiting of supplies to the over fed-frame or the repair of the wasted body by the proper kinds of food and stimulants; the bringing into play, and so again into existence, muscle that had become wasted and paralyzed by disease; these are among the aims the physician seeks to accomplish, and these are among the means which he seeks to employ irrespectively, but by no means necessarily, without the use of medicine; these are among the agencies which you hold in your power in the treatment of disease, and that you, each of you, exercise daily in coping with the various forms of malady, of ailment, and of constitution.—(*Lancet.*)

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Chloride of Ethylidene as an Anæsthetic.—Dr. Thos. E. Jenkins reports the following of interest in the *Richmond and Louisville Med. Jour.*: "To test the powers and observe the effects of this new anæsthetic a man was selected, aged about thirty years, apparently healthy, who gave his consent to inhale its vapor, and have a tooth extracted while under its influence. This was done in this city, Louisville.

"The vapor was administered from a two-necked bottle loosely filled with dry sponge. One of the necks of the bottle was provided with a tube furnished with a valve in its side opening outward, and a properly shaped face-piece to cover the mouth and nostrils; the other neck was traversed by an open tube reaching to the bottom of the bottle. This arrangement allowed free access of air to the bottle through the latter tube, while the gases from the lungs passed into the atmosphere through the valve in the first above-mentioned tube, thus insuring the patient a free supply of a pure mixture of air and the anæsthetic vapor. The patient had eaten a hearty dinner about an hour before the commencement of the experiment; his pulse was 80 per minute; color ruddy. In about a minute after the inhaling tube was placed over his mouth and nostrils, his pulse mounted to 90, then to 100 and 120, when the period of excitement came on; his color heightened, and he gave expression to the delightful sensations he enjoyed. In less than a minute afterward he was himself again and his pulse was 80, and he said he felt as well as before inhaling the vapor. After the lapse of twenty or thirty minutes he again inhaled the vapor, and promptly passed to the period of excitement, the pulse quickly mounting from 80 to 125, when suddenly he pushed the apparatus aside and made energetic pugilistic demonstrations. In a few seconds he passed from under the influence of the anæsthetic and expressed himself as feeling perfectly well; pulse 80, and color natural. No difference in the rapidity of his breathing was observed up to this time. In about half an hour the apparatus was readjusted, and he again commenced to breathe the vapor; and in the course of a minute to a minute and a half he passed the stage of excitement, breathing more slowly and deeply. His pulse having gone to 120 to 125, it gradually but quickly fell to 100, then to 90, and finally to 80, when Dr. Canine promptly extracted a bicuspid, during which operation he exhibited decided evidences of consciousness, shown by his struggling movement of the arms and by moaning. His eyes were closed. After the extraction of the tooth, he lay quiet long enough under the influence of the anæsthetic to have had perhaps ten more teeth extracted. He then opened his eyes and complained of slight nausea, quite unconscious of everything that had been going on. His pulse, during this time, at 80, and his color and complexion were not changed or altered during any of the experiments, except as above stated. At the period of excitement his color appeared to be slightly heightened. No pallor nor lividity was noticed at any time, nor was the force and volume of the pulse diminished in an appreciable degree.

The last experiment lasted about five minutes. The nausea following the last administration of the anæsthetic was to be looked for, since it almost always follows the rapidly repeated administrations of anæsthetics (even of nitrous oxide), especially when the stomach is replete with food. Altogether one ounce, by weight, of the chloride was used.

"The points to be noticed in this experiment are principally the following: 1. The rapid production of anæsthesia. 2. The prompt recovery after the administration of the vapor is suspended. 3. The maintenance of normal heart action, as shown by the rapidity, volume, and force of the pulse after anæsthesia sets in. 4. The freedom from pallor or lividity of the surface."

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"*Bichloride of Methylene as an Anæsthetic.*—Mr. Spencer Wells states that for more than three years he has employed bichloride of methylene as an anæsthetic in many operations, and he feels certain that it is quite as effectual and much safer than chloroform, while it is less often followed by vomiting, and headache, and depression."—(*Braithwaite's Retrospect.*)

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"*Anæsthetic Properties of Carbolic Acid.*—Carbolic acid has a striking anæsthetic power. Mr. E. Wilson says: 'I employ it at present very commonly previous to the application of caustic to lupus and epithelioma. It benumbs the surface, it dulls the excessive sensibility of the superficial nerves, and it thereby permits the caustic application of our remedies with a great reduction in the amount of pain.'"—(*Ibid.*)

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Chloral: its Order of Action.—In relation to this Dr. Robert U. Ronayne observes, in the *Medical Press and Circular:* "As to its toxic effects, it seems that the functions acted on by chloral are attacked in this order: 1. The cerebral. 2. The voluntary muscular. 3. The respiratory. 4. The heart. And it is only when given in doses sufficiently large to induce a depressing effect on the last, that any threatening or fatal result is to be feared; and since the ultimate action of chloral and chloroform are similar, only that of the former is infinitesimally slower than that of the latter, it follows that poisoning by chloral must be more than proportionately rare."

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Chloral as a Caustic.—"Dr. Gibbons thought that chloral might act locally as a caustic. Recently, while laboring under a painful affection involving the jaw, he had enveloped a few grains of the article in cotton and placed it on the gum. Decided destruction of tissue of the gum and adjacent part of the tongue ensued, apparently due to the chloral. Yet a strong solution might be taken into the stomach with impunity. The same fact was noted with regard to chloroform, which might be taken into the stomach in concentrated form without discomfort, yet when applied to the skin, or held in the mouth, caused decided pain."—(*Pacific Med. and Surg. Jour.*)

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"*Asthenia or Anæsthesia in Surgical Operations from Compression of the Vagus Nerve* (*The Practitioner*, December, 1870).—In a short paper, probably the last ever written by its distinguished author, the late Dr. Augustus Waller, of Geneva, shows that pressure exerted upon the vagus nerve in the neck produces on man most of the principal

symptoms observed on animals when that nerve is isolated and subjected to the direct influence of galvanism. Upwards of twenty years ago, when studying the subject of compression with reference to hysteria and epilepsy, two cases occurred where compression of the vagus was followed by all the symptoms described by Aristotle. 'In each case the patient, after moderate pressure, fell down, as if struck by lightning, on the floor before me, a lifeless corpse, with all the voluntary muscles completely relaxed. Scarcely had I time to become alarmed when sensation and voluntary power returned, although for some time afterwards there remained considerable weakness and debility, though not sufficient to prevent the patient from walking away unassisted.'

"These symptoms appear to the ordinary observer to be attended with considerable danger, but such, in reality, is not the fact, as the heart is always found to be pulsating, and the respiration in play. He therefore recommends its adoption in cases where the abolition of muscular power may be desirable, as in instances of dislocated bones of difficult reduction, previous to the employment of the ordinary anæsthetics, the administration of which is attended with a certain amount of danger. As an illustration of the practice, he narrates the case of a powerful, athletic man, in whom, in consequence of a fall, the head of the humerus was dislocated beneath the clavicle. An ineffectual effort had been made to reduce it without chloroform, and while the messenger was procuring that agent compression was made of both vagi, while extension and counter-extension were kept up. At the end of two or three minutes, just as the two carotids could no longer be felt beating beneath the fingers, a sudden click indicated the return of the bone into its socket.

"As an illustration of the anæsthetic effects of vagal pressure, he says: 'A molar tooth was extracted from an out-patient of the Hospital Cantonel by one of the house surgeons. While the patient was seated, I was prepared, at the back of the chair, to apply pressure on both vagi. As soon as the key was gently applied around the tooth, I began the pressure, and gave a sign to the operator to commence. The result was perfectly satisfactory. According to the statement of the patient, she had suffered no pain, and was most enthusiastic in her thanks to me. At the moment of extraction the patient cried out, which, however, occurs in many instances with chloroform, where, as in this case, the patients afterwards declare they have not felt any pain.'"—(*Med. Times.*)

Rickets a cause of late Dentition.—Dr. C. C. Ritchie states (*Med. Times and Gaz.*): "Sir William Jenner has well shown that rickets is infinitely the most common cause of late dentition which may be present when the rickety deformity is very slight. This effect on dentition is peculiar to rickets among diseases of nutrition. I have seen several cases where, at three years of age, only six teeth had appeared. Sometimes teeth, which have already appeared, become black, and decay, owing, as Vogel has shown, to insufficient development of the enamel; in other cases, as in a lad of five, who came under my care, the whole of the teeth drop out undecayed.

"This modification of dentition is due to the arrested growth so characteristic of rickets, and which continues after the termination of the constitutional disease; hence the stunted stature of those who have

been rickety. Wishing to trace, if possible, rickety deformities into adult life, I examined 133 persons above fifteen years of age who applied consecutively for advice at the dispensary, seventeen of whom were found to present unmistakable traces of rachitic deformity.

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"The treatment of rickets requires as its essential condition the restoration of healthy nutrition—hence diet and hygienic measures are of the utmost importance. Regular feeding at stated intervals; abundance of milk, with a fourth part of lime-water, and the addition of a teaspoonful or two of cream to the half-pint; as the child gets older, a little beef-tea, with bread, eggs, or light puddings; if potatoes be given, they must be finely mashed with a little meat gravy; after eighteen or twenty months, meat twice a day, or strong soup in small quantities—these are the chief dietetic indications.

"Daily tepid chalybeate or salt-water baths, plenty of warm woolen clothing, warm but well-ventilated rooms, and as much dry, open air (bracing sea-air to be preferred) as practicable, are points which will at once suggest themselves."

Irritation: its Sequelæ and Treatment.—From an interesting paper on this subject, by Prof. N. R. Smith (*Baltimore Med. Jour.*), we make the following extracts: "Local irritation may undoubtedly cause organic changes and morbid growths, without first producing what may be properly called inflammation; that is, it may so modify the nutrition of the part, without the production of redness, swelling, heat, or pain, as to give rise to morbid alterations of structure. Alterations in the various tissues may be thus brought about. Long-continued irritation of mucous membranes and of the external integument may thus induce organic changes. Labial epithelioma is more frequently the result of irritation of the lip by the pipe or cigar than of any other cause. It may be questioned whether there is not some lurking constitutional cause contributing to this result, which might never be effective but for this local irritation inviting the disease to this part. Scrotal epithelioma in chimney sweeps is similarly produced. Tumors of various forms also result from such local irritation as may modify nutrition and render it abnormal. So, also, simple hyperæmia may be the result of the same cause. Spasmodic strictures may manifestly be the result of simple irritation.

"But, undoubtedly, most of the organic affections which primarily result from irritation are the immediate result of inflammation, chronic or acute, which is the legitimate result of irritation. Irritation does not cease when inflammation supervenes. Irritation continues after hyperæmia is produced, and is one of the four phenomena which constitute inflammation. A part inflamed, indeed, becomes morbidly sensitive, and mechanical and other irritants operating on an exalted sensibility are still more productive of irritation.

"By *irritability*, I mean a strong disposition in a part to be irritated (I always employ the term in a pathological sense). By the term *irritant*, I mean any agent which excites irritation. By the term *irritation*, I mean the morbid excitation which results from the action of the irritant on the vital properties of a part.

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"*Treatment of Irritation.*—The first duty of the surgeon, in the treat-

ment of irritation, is to remove the cause, if its character and place can be ascertained; the next is, to place the part, however irritated, in a state of complete repose. If the eye be hurt, let it be closed and light excluded. If a joint or a muscle be irritated mechanically, let it rest in any easy posture.

"But, besides these negative means, there are more positive remedies by which to abbreviate irritation. Every one is familiar with the soothing effect of warmth and moisture to a part smarting from recent injury. A warm poultice or fomentation, gently applied, is always grateful to the sensations of the patient. The thousand nostrums with which such applications are qualified, are simply contemptible. Such applications effect their good, as I have stated, by their warmth and moisture, and by protecting the part from the air.

"The local effect of narcotic applications is often exceedingly marked. The tincture of opium, or, better still, the aqueous solution of opium, will strikingly soothe the irritated sensibilities of the part, and the latter especially when applied to an injured eye. I have seen intense neuralgia, which is chronic irritation, subdued promptly by the application of atropiæ sulph. of the strength of five grains to the ounce of water, applied with a wet rag, and covered with oiled silk. The extract of belladonna, is also efficacious. Bruised stramonium leaves are also a useful application.

"When the phenomena of inflammation become superadded, irritation still remains as one of the traits of that condition, and if the pain or spasm in an inflamed part is urgent, the same soothing remedies are to be employed. Indeed, it often happens that pain and spasm increase after redness, swelling, and heat characterize the local disease."

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"*Neuralgia of Jaw following Tooth Extraction; Treatment by Prof. Gross' Method.*—In the number of the *American Journal of the Medical Sciences* for July, 1870, is a description by Prof. Gross, of a form of neuralgia of the jaw-bones following tooth extraction, and depending, as he thinks, on compression of the alveolar nerves by the osseous material deposited during the reparative process. The following is an example of the affection:

"Solomon K., aged eighteen, had for some weeks been attending as an out-patient at the Leeds Infirmary, on account of excruciating pain in the lower jaw. Six months ago, the left lower anterior bicuspid tooth was removed in a state of decay. In from a week to ten days afterward, he began to suffer intense pain in the part, and occasionally a little blood oozed from the gum. He sought relief from many sources, but in vain; and during his attendance as an out-patient at the infirmary, the usual anti-neuralgic remedies had been prescribed to no purpose. The affected gum was hard, and adherent to the bone; and pressure upon it aggravated the pain, which, though chiefly felt where the tooth had been, radiated to a considerable distance around. After having seen Dr. Gross' statement, Mr. Jessup admitted the young man; and, on October 20th, he cut down upon and removed with bone forceps and gouge a portion of the alveolar border. The relief was complete, and continued up to October 29th, on which day he was discharged. He has not since been seen."—(*British Med. Jour.* and *Med. News.*)

"*Idiopathic Glossitis of the left half of the Tongue.* Case reported by J. W. Hawkins, M.D., of Canton, Mo.—The extreme rarity of idiopathic glossitis, involving but one side of the tongue, has induced me to furnish a report of the following case for publication:

"P. G., aged 22, a farmer of robust constitution and healthy appearance, applied to me, March 15th, for medical aid on account of difficult deglutition and soreness of throat. On examination, a little turgidity of the vessels, with slight redness and little or no swelling of the tonsils, was all that was apparent. Prescribed a cathartic of podophyllin and a gargle of chlorate of potassa.

"March 17th.—Left half of the tongue considerably swelled, so as to render his speech exceedingly difficult. Tonsils very little swollen. Continued the same treatment, with the addition of a cantharidal vesicant to the left side of the throat.

"March 20th.—Left half of the tongue enormously swollen from tip to root, with evident signs of pus having formed. Objected to having it cut into, and fortunately for him, a few hours after, while making a strong effort to swallow his saliva, the parts in front of the left tonsil ruptured, and the pus flowed freely out, giving instant and permanent relief. Recovery followed without further difficulty."—(*Medical Archives* and *Boston Med. and Surg. Jour.*)

Injury of Lips. Operation by Prof. W. T. Briggs. Reported by Dr. W. J. Sneed (*Nashville Jour. Med.*).—"Mr. T., a citizen of Nashville, in a fight was so unfortunate as to have a portion of his lower lip bitten off. The bite embraced more than half the lip, and extended down on the chin. He was brought to my office bleeding profusely. Soon after a friend came running up with the missing fragment of lip, measuring nearly an inch on its free border and three-fourths in width, covered with blood and dirt, and begged me to stitch it on its original position, so as to avoid the ghastly deformity that would result. I preferred, however, to patch the wound with living flesh, and proceeded as follows: first, by a V-shaped incision I removed the rough edges of each side of the wound, extending the angle far down on the chin; then dissected each side freely from the lower jaw, and brought them together and held them in contact with three twisted sutures. On yesterday, the fifth day, I removed the sutures. You observe, now, that he has a pretty fair lip. You could scarcely tell, except by the scar—which will be much less after a while—that he lost any of it."

"*Epithelioma of Cheek; Removal of Growth; Recovery.* Under the care of Mr. Erichsen, University College Hospital.—Caroline M., aged fifty, a healthy married woman, and free from any constitutional or hereditary taint, was admitted into this hospital under the care of Mr. Erichsen, on July 12, 1870, with a swelling in the right cheek. Five months before, she had noticed a lump in this position, and it has since gradually increased in size, and at the same time become both tender and painful, with occasional shooting pains in the side of the head, and general swelling of the cheek.

"On admission, the dresser, Mr. Pellereau, made the following note: the patient is a full-faced, florid, and healthy-looking woman. On examination, the face is seen to be clearly fuller on the right side, and on putting the finger into the mouth a hardish mass is felt opposite

the bicuspid and first molar tooth of the upper jaw on the right side. It seems to be attached slightly to the gum and the alveolar border, but to belong chiefly to the cheek. The mucous membrane over it is pale in color, and puckered almost like an old scar of an ulcer, but she gives no history of any ulcer at that place. The teeth are sound. Mr. Erichsen, on examining it, pronounced it to be an epithelioma springing from the submucous tissue of the cheek, and becoming attached to the gum and upper jaw-bone. There was no implication of lymphatic glands.

"On July 14, Mr. Erichsen removed the growth, the patient being under chloroform. He first made an incision from the angle of the mouth nearly to the malar bone, and turned up the flap of the cheek. He then removed the growth from the flap, taking the gum with it, and finally scraped the alveolar border with a gouge at the spot where the tumor affected the gum. The wound was brought together with three harelip pins and some silver sutures, the bleeding being arrested by torsion and by the pins. Six days later the wound was all but healed, and the woman left the hospital well on July 25.

"Microscopically, the tumor presented the ordinary characters of squamous epithelioma in this position, well-marked epithelial globes being unusually numerous."—(*Med. Times and Gaz.*)

Dentigerous Cyst.—Dr. Hodges exhibited to the Boston Soc. for Med. Improvement (*Boston Med. and Surg. Jour.*) "two teeth, a canine and a bicuspid, removed from a dentigerous cyst, which had developed at the side of the lower maxilla, in a boy ten years old. The cyst had been but four months in forming. The external wall, which was thin and parchment-like, on being excised permitted the easy extraction of the misplaced teeth. Dr. Hodges remarked that this was the third specimen of this somewhat infrequent abnormity which he had exhibited to the society."

"*Cancerous Inoculation with the Trocar.*—Dr. Reineke has published, in Virchow's *Archiv* (51 Bd., 3 Heft), two cases of abdominal cancer, in which paracentesis was used. Both cases ended fatally, and it was found that cancerous tumors had formed along the track of the trocar. The author considers this as a regular inoculation, and thinks that, in appropriate cases, experiments should be undertaken. The tumors here alluded to are very different from the cancerous deposits which may take place at a distance from the region principally invaded by carcinoma; they were evidently the result of direct traumatic contamination."—(*Lancet.*)

Healing of Wounds in Constitutional Syphilis.—"Dr. John Merkel, of Nürnberg, relates three cases, in the *Aertz. Int. Bl.*, No. 49, 1870, in which syphilitic symptoms made their appearance when cicatrization was almost complete. One case was one of hydrocele, tapped and treated by Beck's method of incising the tunica vaginalis and fixing it by suture to the external skin. The two others were gunshot wounds. The latent syphilis did not interfere in the least with the progress of healing; but just when the solutions of continuity were upon finally closing, either eruptions appeared over the whole frame, or unmistaka-

ble syphilitic tubercles formed on the margins of the wounds. The author ordered mercurial frictions with the best effects."—(*Ibid.*)

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Syphilitic Infection by the Mouth.—Prof. Jos. Pancoast says, in an interesting address on "Classic Men and Scenes in Europe" (*Richmond and Louisville Med. Jour.*): "To Prof. Sigmund we are indebted for the knowledge of the important fact that the raw ulcerations on the side of the tongue, and called syphilitic psoriasis, are very contagious. From ignorance on this point, he has seen the most deplorable consequences follow, as many of us have done—the infected child poisoning the nurse at whose breast it sucks; the diseased nurse poisoning the child, by first chewing its food in her own mouth; and the most innocent and pure minded have their systems infected simply by the kiss of a brother or other near relative."

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Burns and Scalds.—S. B. Judkin, M.D., of Cuba, Ohio, writes (*Jour. of Materia Medica* and *Sci. Amer.*): "I have treated a good many cases of burns and scalds, and to my entire satisfaction. I dissolve white lead in flaxseed oil, to the consistency of milk, and apply over the entire burn or scald every five minutes. I have been in the habit of using a soft feather to apply the liniment. I have used this preparation a great many times in the fifteen years of my practice, and have never been disappointed; it gives relief sooner and is more permanent in its effects than any preparation I am acquainted with. It should be applied often, and a full dose of an opiate will be advantageous if the burn is deep."

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"*Migration of White Corpuscles.*—Dr. Caton, of Liverpool, who has repeated Dr. Cohnheim's experiments on the migration of the white corpuscles, affords an explanation of the seemingly contradictory results obtained by different observers. His first operations were made on winter-frogs, which are always in a condition of debility, and in none out of nearly a dozen of these did he see anything more than is usually described in inflammatory stasis; but on examining healthy and vigorous frogs freshly caught late in the spring, the passage of the white corpuscles through the walls of the smaller veins and capillaries was distinctly seen. He also attributes the failure of some of the former experiments to the administration of too large a dose of woorara."—(*Med. Gazette.*)

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Sulphurous Acid as a Disinfectant.—"The value of sulphurous acid gas as a disinfectant has been established by many and crucial experiments, and is generally admitted. This agent is specially recommended by medical officers of health. There is a want of convenient methods of applying it, and especially of applying it in a limited space and to a definite and measured degree. Mr. John Gamgee has called attention to the convenience of employing it as disengaged from an alcoholic solution. Cold alcohol will, he states, take up three hundred times its bulk of sulphurous acid gas; and where, for example, it is desired to saturate a box of clothing with this gas, it is sufficient to drop a certain quantity of its saturated solution of alcohol into the floor of the box, and a large definite quantity is set free by the evaporation. The sug-

gestion is one of importance, and seems to us worthy of attention. The solution of sulphurous acid in alcohol could easily, and probably with advantage, become a general article of pharmaceutical commerce for medical and sanitary use."—(*Brit. Med. Jour.* and *Med. Gazette.*)

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Chemistry of Gold. By Prof. Charles A. Joy.—"In hardness gold is between silver and lead; it is softer than silver and harder than lead. The melting-point is usually given at about 2000° F., and when in a fused state the molten metal has a bluish-green color, and it then expands considerably, but on cooling the metal shrinks so much as to be unavailable for castings. It is said to contract more than any other metal on cooling. It requires the highest heat of the oxyhydrogen flame to convert it into a vapor, the color of which is purple. Gold is nearly as good a conductor of electricity as copper; both metals are excelled in this property by silver. The affinity of gold for oxygen is so slight that it suffers no change by exposure to air and moisture at any temperature. Selenic acid is the only simple acid that acts upon the metal; some mixture that liberates chlorine being necessary to its solution. The best solvent is *aqua regia,* composed of one part of nitric acid and four parts of hydrochloric acid. The metal can be attacked by hydrochloric acid alone, provided that a stream of ozone be passed into the vessel by which chlorine is liberated which dissolves the gold.

"The alkalies fortunately do not attack gold, and a crucible of this metal can therefore be employed for the fusion of minerals with potash or soda in the course of quantitative analysis.

"The crystalline form of gold is the octahedron or cube, or modifications of the regular system. It can be obtained crystallized in scales by electrolysis. The metal is capable of receiving a high lustre by polishing, but is inferior in brilliancy to steel, silver, and mercury. The solubility of gold in zinc is made use of for the separation of the precious metal from its ore, and the metal can be purified by passing a stream of chlorine through the melted gold and thus washing out the foreign metals as chlorides.

"The compounds of gold with other elements have been pretty thoroughly investigated, and some interesting results have been obtained. It was for a long time supposed that oxygen would not unite with it, but later researches have shown the error of this assertion. We now have a number of interesting oxygen salts, some of which are of value in the arts. The suboxide of gold, Au^2O, is a dark-green powder, which gives up its oxygen by heat and is converted into the chloride by hydrochloric acid. It is a very unstable compound, and can be obtained by the decomposing action of the galvanic battery, or by the action of a solution of caustic potash on the chloride of gold. A number of subsalts called auro-salts, are described in our later works on chemistry; among them we may mention the following:

"The subchloride, auro-chloride, is a yellowish-white powder which can be prepared by heating the higher chloride just enough to expel a part of the chlorine. Too much heat will reduce it to finely-divided metal, and all of the chlorine will be driven off. The corresponding auro-bromide salt has never, to our knowledge, been prepared, though it ought, by anology, to be made from the higher bromide.

"The auro-iodide is a pale-green powder which is produced by the

addition of hydriodic acid or iodide of potassium to a solution of the auro-chloride. Some free iodine falls down with it which can be sublimed by gentle heat, thus giving a pure salt. As the auro-iodide of gold is soluble in hydriodic acid and iodide of potassium, an excess of those agents must be avoided in its preparation.

"By decomposing the double cyanide of gold and potassium with hydrochloric acid and concentrating the liquid, a beautiful yellow crystalline powder will fall down, insoluble in water, which on analysis has been shown to be the cyanide of gold, auro-cyanide. The powder is easily dissolved in cyanide of potassium. A more interesting salt is the subcyanide of gold and potassium, now called potassium-auro-cyanide, which is used in electroplating. We obtain it by dissolving the peroxide of gold, auric acid, in hot cyanide of potassium, or allowing the cyanide of potassium to act upon metallic gold with access of the air. It forms colorless, transparent crystals if evaporated with caution. A similar ammonium compound exists, composed of small colorless crystals, which may have peculiar properties in galvanoplastic operations, but it is little known. Double sulphites of soda and gold, and baryta and gold, have been prepared, and as they may hereafter have technical applications it would be well to mention them.

"The baryta salt is a voluminous purple-red unstable powder, which can be produced by the action of soda lye, sulphite of soda, and chloride of barium on the oxide of gold. By adding carbonate of soda to a solution of this salt we obtain a clear orange-red powder, easily soluble in water, but insoluble in alcohol, which is the sulphite of soda and gold.

"The hyposulphite of gold and soda is used for gilding the daguerreotype plate, and for fixing the positive proof obtained in photographic printing.

"It crystallizes in groups of colorless needles, having a sweetish taste, which are very soluble in water, but insoluble in alcohol. It may be prepared in a state of purity by mixing concentrated solutions of one part of chloride of gold and three parts of hyposulphite of soda. It is purified by solution in water and reprecipitation with alcohol. It may be mixed with diluted sulphuric or hydrochloric acid without the evolution of sulphurous acid. And what is still more remarkable, metallic gold is not thrown down from solutions of this salt by sulphate of iron, chloride of tin, or oxalic acid. The hyposulphite of soda and gold has proved to be one of the most valuable salts that has come to the assistance of photographers, and if it were used more freely and the prints were more thoroughly washed after fixing and toning, they would be much less likely to fade than they are at the present time.

"There is probably a silicate of gold—at least, the ruby glass obtained by fusing pulverized glass, containing lead and borax, with chloride of gold, would appear to be such a compound. When freshly prepared, the glass is colorless, and it first assumes a red color on heating to gentle redness. The violet-brown powder which gives the beautiful red color to porcelain is obtained by mixing weak solutions of chloride of gold with protochloride of tin containing some perchloride, and appears to be essentially a double stannous and stannate of gold. Berzelius called it a hydrated double stannate of gold and tin. This compound has long been known under the name of the *purple of Cassius*, and its true constitution is the subject of much discussion among chemists.

"The peroxide of gold, sometimes called auric acid, is a brown powder, which is decomposed into metallic gold and oxygen at 473° F., and is insoluble in water, but readily dissolved in caustic potash. It is prepared by mixing perchloride of gold with potash lye until the precipitate is redissolved; the solution must then be saturated with sulphuric acid and boiled for a long time. The oxide which precipitates is dissolved in nitric acid, the solution largely diluted with water by which it is obtained as a yellow hydrate if the acid used be weak, or as a brown anhydrous oxide if strong. Although it is taken up by strong nitric and sulphuric acids, no true salts are formed. Hydrochloric, hydrobromic, and hydridic acids dissolve it, producing the terchloride, terbromide, and teriodide of gold.

"Hydrated auric acid can be obtained by adding magnesia to a solution of the chloride and treating the precipitate with a little nitric acid. It forms a chestnut-brown powder, which at 212° F. loses its water and goes over to the anhydrous oxide. The hydrate is readily acted on by the hydrated alkalies, and forms with them a series of salts called *aurates*. Some of these can be used in electro-gilding. Aurates of potash, soda, baryta, and magnesia have been prepared and studied, but do not offer much matter of interest for a journal of applied chemistry.

"Auric acid has such an attraction for ammonia that it decomposes the neutral salts of that alkali, such as the sulphate, and sets the acid at liberty. Auric acid when covered with ammonia is transformed into an olive-green powder which explodes powerfully by percussion, friction, or heat. By precipitating a chloride of gold solution with ammonia a yellowish-brown precipitate is formed possessing similar properties. The protosulphide of gold is not known with certainty, but the protosulphide of sodium and gold has been prepared in the form of colorless monoclinic columns. If gold be heated in contact with sulphur, it no longer amalgamates with facility, and this may account for the difficulty in the working of auriferous pyrites. Whether the native ores of gold occurring in Colorado are chemical compounds with sulphur is a much-mooted question, and there are some geologists of experience who hold to the existence of native sulphides of gold. A tersulphide, sometimes called a bisulphide of gold, can be made when a current of sulphuretted hydrogen is transmitted through a cold solution of terchloride of gold. It is a black powder, easily decomposed by heat, and hence cannot be made by fusing sulphur and gold together. The telluride of gold is not known by itself, but the double telluride of gold and silver occurs as graphic telluriums, and we have foliated telluriums containing gold, lead, and sulphur. The phosphide of gold can be made by gently heating gold in the vapor of phosphorus, but it is easily decomposed at a higher temperature. The terchloride of gold is the dark-red crystalline deliquescent mass, which dissolves with an intense yellow color, and is produced by evaporating to dryness a solution of gold in *aqua regia*. The terchloride of gold combines with other metallic chlorides to form double salts, which, as they have long been known, need not occupy much space in this connection. The potassium, sodium, calcium, and magnesium salts are the most familiar. The terbromide of gold is analogous to the terchloride, but the equivalent teriodide is not known.

"The metal is precipitated from solutions of gold salts by phosphorus,

by a majority of the metals, by oxalic acid, especially with the aid of light, by a solution of chloride of antimony in hydrochloric acid, and by protosalts of iron. The gold solutions color the skin a dark purple. For the deposition of gold on glass the reducing fluid is made of glucose, alcohol, and aldehyde.

"M. Pratt, of Bordeaux, has published the results of extended researches into the properties and compounds of gold. He states that chemically pure gold can be prepared in the form of sponge; that there exists a liquid chloride superior to the perchloride, and that salts can be made from the suboxides and binoxide. He succeeded in making a fluoride of gold from which he prepared fluorine in the form of a yellowish gas similar to chlorine.

"The preparation of spongy gold is accomplished by saturating a solution containing ten per cent. of chloride of gold with pulverized carbonate of potash, and for each equivalent of gold salt he adds an equivalent of a saturated solution of the same carbonate; he then treats the filtered liquid with five equivalents of pulverized oxalic acid, added in small quantities at a time, and boils the liquid for ten minutes. The gold is reduced to the state of an extremely fine powder, and the grains agglomerate and form a spongy mass without metallic lustre, but convertible by the hammer into solid ingots. M. Pratt has also prepared the carbonate of gold."—(*Jour. of Applied Chemistry.*)

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Silver Alloy Non-homogeneous.—The *Chem. News* quotes the following on this subject from the report of the Deputy Master of the English Mint: "In most European mints, before the silver alloy is cast into bars, the contents of the crucible are stirred, and a small quantity of the metal removed by a ladle lined with clay, or (as at Utrecht) by a pair of forceps, which open in the molten mass and inclose a button of metal. This test piece is assayed by the volumetric method, a process which occupies from fifteen to twenty minutes, and, as in most cases the amount of alloy operated upon is very considerable, there is no inconvenience in maintaining the contents of the crucible in a molten state until the assay is completed. The melter is thus enabled to adjust, if necessary, the relative proportions of the constituent metals. The portion of metal taken from the crucible represents the actual composition of the standard silver with far greater accuracy than a test piece cut from the end of the bar of the solidified alloy.

"In order to explain this, it is necessary for me to enter somewhat minutely into the consideration of an important series of experiments conducted in the mint at Paris, by Levol, on the remarkable molecular mobility of alloys, in virtue of which certain combinations of the constituents of a molten alloy become segregated from the mass, the homogeneous character of which is thereby destroyed. Thus, to take an extreme case, an alloy containing 77·33 per cent. of silver, and 22·67 per cent. of copper, was cast in a cubical mould of 42 millimetres. A portion cut from the centre of the mass gave on assay 78·318 per cent. of silver, while a portion cut from one of the angles was found to contain only 77·015 per cent. of silver, showing a difference of 13·05 millimetres. Levol proved that it is only the alloy containing 71·893 per cent. of silver and 28·107 per cent. of copper which is absolutely homogeneous. It is interesting to note that there is, as far as I am aware, no monetary alloy having

this composition; the nearest, the Swedish standard, containing 75·00 per cent. of silver. He also finds that while the alloy containing 71·89 per cent. of silver is homogeneous, in all alloys containing more silver than this amount, the centre of the solidified mass is richer than the exterior; on the other hand, in alloys of fineness lower than 71·89, the centre contains less silver than the external portions. It is of great interest to observe the results of an experiment on a cubical mass of 42 millimetres, similar in composition to the British standard. The maximum difference between the centre and one edge was 9·95 per mille, while the mean variation between the composition of pieces taken from different parts of the mass was 2·96 per mille. Fortunately the gold-copper alloys employed in the British and other European mints present a very slight variation in composition, due to molecular arrangement. I may remark that the copper in the standard gold alloy has a singular tendency to oxidize even to the centre of the mass, a phenomenon in which I cannot but think the actual occlusion of oxygen plays an important part.

"Although the defects due to the non-homogeneous character of the alloy are to some extent modified by rolling the bars, still the centre of a fillet of standard silver often differs by at least 2·3 per mille from the edges, and a five-franc piece, therefore, will vary in composition in different parts of the coin, the centre being the richest; or if (as is the case with the shilling) two coins are cut in the width of a fillet, the portion containing most silver will be near one edge of each coin."

Brittle Gold.—It is stated (*Ibid.*): "Immediately connected with this subject is the fact that gold frequently contains minute traces of lead, arsenic, antimony, and bismuth. These metals, even when present to the 1-2000th part of the mass, render the gold brittle and totally unfit for coining, probably by enabling the alloy known as standard gold to assume a crystalline structure. I find that on the Continent, those countries which have an extensive gold currency are but little troubled with brittle gold. The reason is obvious; the impure metals are removed by refining, which forms, as I have stated, one of the ordinary operations of the mint; and the utmost care is taken to conduct the process in an efficient manner. With regard to the direct treatment of brittle gold, it is needless to remind you that the experiments in the English mint have proved the advisability of adopting Miller's process."

"*Wire of Solder.*—I have made wire of solder for my own use for many years by the following simple process: Take a sheet of stiff writing or drawing-paper, and roll it in a conical form, exactly like the cornucopiæ sold by confectioners, but broader in proportion to its length. Make a ring of stiff wire to hold it in, attaching a suitable handle to the ring. The point of the cone may be cut off to leave an orifice of the proper dimensions. When filled with molten solder, it is held just above the surface of a pail of cold water; the stream of solder flowing from it will congeal in the shape of a wire. If held a little higher, so that the stream breaks into drops before striking the water, it will form elongated 'tears' of metal. By holding it still higher, each drop forms a thin concave cup or shell. As each of these forms has its peculiar use in my business, I found this simple instrument invaluable. A few experi-

ments will convince any one that he can prepare solder in any convenient form by the aid of a sheet of paper and a bucket of cold water." (C. E. T., *Sci. Amer.*)

"*Soluble Glass.*—A great many uses have been ascribed to this substance, some of which are obviously absurd. Others which seem rational, have been failures in the hands of most people who have tried them, and we are frequently called upon to explain the causes of failure. This is in all cases difficult The causes are in many cases obscure, even when ample opportunity is afforded for examination; and as we seldom or never have opportunity to make a thorough examination, we are generally unable to reply definitely and intelligently to such queries.

"Our own experiments with this material have not been of the most satisfactory character. In general, we have found that after it has been applied for a longer or shorter period it becomes crumbly, and cleaves off from the surface of wood or iron. We are informed by a thorough chemist that such has uniformly been his experience, and that he thinks soluble glass becomes crystalline in structure when exposed to the action of the atmosphere.

"A gentleman has just left our office who purchased some of this material from a dealer in this city, with a view to use it as a protective coating to iron. He says it would not long adhere to the metal. He applied to the manufacturers for directions in correcting his supposed errors in its use, but could get no information by which he could secure any improvement in his results, and consequently he voted 'water-glass' a humbug.

"A clue to these failures is perhaps found in a lecture recently delivered by T. S. Barff, F.C.S., in the hall of the Society of Arts in London. It seems from the observations of Mr. Barff, that soluble glass (silicate of soda or potash) is frequently too alkaline for satisfactory use in painting. The best way to make these silicates is to fuse the component materials together in a reverberatory furnace. When cold they should be put into open vessels of hot water, when an oily liquid is formed, which is a solution of soluble glass. Either of the silicates of potash or soda will generally be discolored from the presence of organic matter. This will, however, settle to the bottom, if the solution be allowed to stand for some days, when the clear supernatant fluid may be drawn off.

"But even then, according to Mr. Barff, the solution is unfit for use in painting, on account of the presence of too much alkali. To remedy this defect, he recommends charging it as much as possible with silica, in the form of white powder obtained from the fluoride of silicon by precipitation with water.

"We think it is probable that this alkaline quality would render soluble glass coating less permanent, wherever applied, and as Mr. Barff's experiments point out the way by which the defect may be remedied, a trial of his method could easily be made in any of the general applications of this substance for which it has been recommended." —(*Sci. Amer.*)

"*Water-proof Compound.*—Dr. Scherzer, an Austrian official at Pekin, has sent to his government some specimens of a Chinese compo-

sition called 'Schioicao,' which has the property of making wood and other substances perfectly water-tight. He says that he has seen in Pekin wooden chests which had been to St. Petersburg and had come back uninjured, and that the Chinese use the composition also for covering straw baskets, which are afterward employed for carrying oil long distances. Card-board, when covered with the composition, becomes as hard as wood, and most wooden buildings in Pekin have a coating of it. It consists of three parts of blood, deprived of its fibrine, four of lime, and a little alum."—(*Ibid.*)

"*Cement for Leather Belting.*—Take of common glue and American isinglass, equal parts; place them in a boiler and add water sufficient to just cover the whole. Let it soak ten hours, then bring the whole to a boiling heat, and add pure tannin until the whole becomes ropy or appears like the white of eggs. Apply it warm. Buff the grain off the leather where it is to be cemented; rub the joint surfaces solidly together, let it dry a few hours, and it is ready for practical use; and, if properly put together, it will not need riveting, as the cement is nearly of the same nature as the leather itself."—(J. S., of Minn., *Ibid.*)

"*Moulding Figures in Paste, Wax, and Clay.*—We clip the following from the *Coachmaker's International Journal:*

"'*To Mould off Figures in Paste.*—Take the crumb of a new-drawn white loaf; mould it until it becomes as close as wax, and very pliable; then beat it, and roll it with a rolling-pin as fine and far as it will go; then point it on moulds, and, when it has taken the suitable figure you desire, dry it in a stove, and it will be very hard; and, to preserve it from vermin, you may mix a little powder of aloes with it.

"'*To Mould small Figures of Jasper Color.*—Oil your moulds with a fine pencil, and diversify them with such colors as you please with gum tragacanth; if they spread or run, use a little of the gall of an ox, for the thicker it is the harder it will be; then mould your paste of the color of jasper, or the like, put it in to fill the mould, tie it with a wire, bake it, or take it out, repair and varnish it, and set it by to harden.

"'*Of making Figures of Clay or Wax.*—There is no need of many tools in this sort of work; the clay is placed upon an easel or table, and you begin and finish the work with your hands. Thost who are used to it never make use of anything but their fingers, except three or four pieces of wood, which are roundish at one end, at the other flat, with a sort of claws and teeth, called by the French, *ebauchoir*—that is, a sort of hatchet; they are about seven or eight inches in length; those with claws are to smooth the stuff; the others, which have teeth, to scratch it.

"'They are made of wax thus: take a pound of wax, half a pound of ochre; some add turpentine; and melt it together with oil of olives; use more or less, according as you would have the matter harder or softer; a little vermilion also should be mixed with it to give it a softer color. When you have made the composition, the figure is worked up with the hand, and those *ebauchoirs* made use of in making up the earthen figures. Practice is the principal mistress in this sort of work, which, at first, is not so easy as that in clay.

"'*To Mould off the Face of a Person in Wax.*—Take a pound of new

wax, a third of colophony; melt them at a slow fire; let them cool so long as that you may endure some of it on your hand without burning it; then having oiled the face with olive oil, cover the hair of the eyelids and eyebrows with paste; then with a brush nimbly cover the face about the thickness of a quarter of a dollar, being careful not to stop the nostrils, and that the person squeeze not his eyes together, because that will render the face deformed.

"'Thus, having the face of wax, take it off gently, and strengthen it with clay on the back side, that it may not give way. After this manner you may cast all sorts of faces: laughing, weeping, grimaces, or wry faces; also fruits or anything else, dividing the mould into two pieces with a warm knife; then fortify them with clay and join them together.

"'There is no way of casting neater than this with wax, and after a very little practice you can become very expert at the business.'"—(*Sci. Amer.*)

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Steam-engines for Household Purposes.—The *Boston Jour. Chemistry* says: "Some months ago we referred to the fact that steam-engines of about one 'Biddy' power had been made for domestic use in France, and that they gave good satisfaction wherever they had been tested. More recently we have met with the following description of one of these engines in an English paper:

"'The apparatus consists of a small vertical boiler, heated by several Bunsen burners, the supply of gas to these burners being governed by a simple automatic arrangement dependent for its action upon the pressure of the steam. Thus, as this pressure rises, the supply of gas is diminished, the adjustment being such that practically the steam is maintained constantly at any pressure to which the apparatus is set. The engine, which is of very simple construction, is carried by the boiler, and the latter is of such capacity as to contain sufficient water for a day's supply. In using the apparatus, all that is necessary is to charge the boiler in the morning and light the gas, and the engine will run the whole day without further attention.'"

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"*Lacquering Varnish.*—A varnish recommended as well adapted for lacquering pictures and engravings, as well as for preserving dried plants and flowers, is prepared by pounding up ten ounces of gum sandarac, four ounces of mastic, and half an ounce of camphor, and adding three quarts of strong alcohol. The mass is to be frequently shaken up, and finally placed in a warm situation until it settles. Plants coated with this varnish will, it is said, be protected from destruction by insects, and will retain their colors fresh and unchanged. This varnish does not peel off, and, therefore, can be applied very thin."—(*Phila. Ledger.*)

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"*Removal of Dried Albumen from Vessels.*—According to Dr. Steinde, vessels in which albumen or albuminous mixtures have been kept can be best cleansed by a mixture of equal parts of a saturated solution of a double bichromate of potash and sulphuric acid. Even burnt albumen is so far destroyed in a short time by this mixture that the vessel can be cleaned very readily by means of warm water and a brush."—(*Ibid.*)

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ORIGINAL COMMUNICATIONS.

ON THE USE OF MATRICES FOR PROXIMAL FILLINGS.

BY LOUIS JACK, D.D.S., PHILADELPHIA, PA.

THE difficulty of correctly filling the proximal surfaces of bicuspids and molars is so universally acknowledged, that any means which may render this class of fillings more easy of performance, and which may promise more certain results than are usually secured, would be regarded by every one as an important desideratum. It would also be desirable to reduce the weariness which is inseparable from difficult operations on the proximal surfaces of the molars, with which all who endeavor to be faithful are familiar. My own experience in this class of cases has been excessive, and the constant repetition of extensive proximals has so repeatedly exhausted my nervous force as at times to fill me with despair. It is therefore a satisfaction to have made an improvement by which much of this difficulty is overcome; by which the introduction of the gold has been rendered much simpler, more certain, and so manageable that I must now let others have the full benefit of my experience.

It will at once be granted, at least by those who have learned to appreciate the advantages gained by the use of the mallet, that if we had a fixed boundary or wall to the outer side of the cavity, having the form required to give a proper shape to the surface of the filling, and a sufficient opening to freely introduce the gold to every portion of it, the solid filling of the space would be easily attainable.

I have for some months been working up a method of introducing proximal fillings by the use of what may be not inappropriately called proximal matrices. It will be necessary first to describe the preparation of the cavity, including the modifications in its form required to adapt it to the application of the means to follow. I trust to be excused for entering at some parts into what may seem excessive detail. To be more clearly understood, and to limit the use of technical terms as

much as possible, it will be assumed that considerable caries is found between the superior first molar and bicuspid, involving both teeth on their proximal surfaces, extending from beneath the gum to the masticating plate of enamel, but not involving the pulp. Everything herein written will apply to the treatment of these two cases, leaving the application to other positions to be made by the reader.

The first step, in case the teeth are in close contact, is to separate them, either by pressure, or, as in so extensive caries as is under consideration, by a parallel-sided file; and from this slight separation rapidly and freely open by cutting down the enamel at the middle of the space, afterwards increasing somewhat freely with the chisel the inner portion of the opening. Another plan I sometimes pursue, where no fracture of the masticating plate has occurred, is to pass a small five-sided drill until it fails to meet with resistance, increasing by a larger drill; and from these two half circles I cut in either direction with suitable chisels by carefully splitting down the enamel,—first the masticating portion,—and continuing until a free space is secured on the inner side; then more carefully opening towards the buccal division, until a slight space is made at this point. The file may be used at this stage to further open the space, and in bringing the surfaces into proper shape and smoothness. When the cavities are so large as is assumed above, there will usually be found so much disorganization of the enamel as to render necessary so much cutting to procure a healthy surface as will open a space abundantly large for the subsequent work. If more is needed, it is secured by wedging; in any case a separation as large at the lower part as a No. 7 Froid file, and at the cervical part as a No 3, is easily secured. The buccal space should be but slightly wedge-shaped, and somewhat smaller than the palatal, for reasons which will appear in the proper place.

After removing the softer caries, the walls of the cavity are prepared for the reception of the filling; the overhanging masticating plate being first cut away in a circular form on a line with the bottom or pulp wall, so that by direct approach every part of the cavity is accessible to slightly curved or even straight instruments. This opens the whole cavity to view. The instrument best adapted for this purpose is the gouge-shaped chisel, which cuts with exceeding keenness, and produces the form desired at this part.* The removal of this portion of the enamel is an important and indispensable step in the improvement I am pursuing. It is practiced by the better operators to a somewhat less degree, and is in many cases an advantage to the organ. No other argument to defend this course need be used than that in these fillings, so difficult of execution, everything subservient to better performance

* For the use of this excellent instrument we are indebted to Dr. Forbes.

must be followed out which is not injurious to the strength and preservation of the organ. It will often prove true here, as elsewhere in surgery, that something must be taken to save the remainder.

The cervical wall is now cut at a right angle to the proximal surface, taking care to remove from the surface of the tooth beneath the gum any half-decomposed enamel which may be present at this part. No retaining groove or pits are needed on this wall.

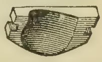
The buccal and palatal walls are next smoothly cut, and on the side of each, where they have sufficient strength, a shallow, round-bottomed groove is made the whole length, and terminating at the very *surface of the masticating plate of enamel.* The outer retaining groove should be near the margin, to avoid any approach to the pulp; the inner one should be nearer the bottom of the cavity, that, in the subsequent cutting away of a portion of the palatal wall in the finishing process, the hold of the gold may not be obliterated. The instruments best adapted for this grooving are made by filing a straight point quite round and small, then bending at a suitable angle, and shaping so as to have the edge at the inner side of the curve. Instruments of this form are better adapted for cutting the hard dentine and enamel than any others, for the reasons that they may be made harder than usual without danger of breakage; they cut with more keenness, do not chatter, leave the surface without sharp lines, and in grooving each cut follows in the last with certainty. They are directly reverse in form to the hoes and excavators in general use.

The pulp wall of the cavity is not altered in the form it presents after the removal of the caries.

The next and very important step is to remove the sharp corners of the mouth of the cavity; and at every part well polish it with pumice-stone; this facilitates the passage of the gold over the surface and the perfect contact of the foil with every part. This polishing is rapidly done by rotating a piece of boxwood armed with pulverized pumice.

Selection is now made of one of the appliances figured below, which are intended to give form to the outer surface of the filling, and are called matrices for this reason. These little affairs are made of a variety of shapes, sizes, and thickness. They are formed of slightly wedge-shaped pieces of steel, and are, as the cut designates, hollowed out at their thicker edge, which depression terminates at the thinner edge. At the part of the depression designed to give shape to the buccal edge of the filling the cut is generally abrupt and deep; at the inner portion it is more shallow and more inclined. It will be observed that the depression widens as it passes toward the thinner edge to follow the usual form of proximal

FIG. 1.



cavities.* The lower and thin edge is rounded, to outline the curved margin of the cervical wall, and to effect pressure upon either the gum or the appliances used to stop the escape of mucus and blood from this tissue.

The plane parts of the face are file-cut or coarsely draw-filed. The reverse side, represented at Fig. 2, and which for convenience of description is divided into three sections, is in most cases plane and smooth, excepting at the section *c*, which is file-cut. It is often necessary to have this side in two surfaces; one, section *a*, parallel with the plane parts of the face, and from this point inclining to a thin edge. A very desirable form is to have section *c* bent backwards to follow the incline of the proximate tooth beneath the gum. At each end a square cut is made to fit the plier ends represented at Fig. 3. After being formed, they are protected from oxidation, heated to redness, plunged in the cold bath, and temper drawn to near blueness; after polishing the depression, they will be ready for use. Quite a number of pairs are necessary to meet the requirements of the differing cases; but for the ordinary sized simple proximal cavities, a dozen pairs, varying in width, in thickness, and in size of depression, are all that I have found necessary. Fig. 1 represents the largest size required, those in most use not being more than from one-half to two-thirds this width and thickness. The character of these modifications will depend somewhat upon the desired end, since either a flat, contour, or excessively convex surface may be produced at the pleasure of the operator, or to suit the needs of the individual operation, by varying the form and depth of the depression. It is also occasionally necessary to have a matrix of unusual form to meet special cases, where the space is extremely great, or where, from the fracture of the outer plate of enamel, a steel one will not remain in position; for this purpose I have found hard boxwood to answer quite well. Silver also, in such cases, will occasionally be found useful. I sometimes take an impression of the immediate part to assist me in the fabrication of a suitable appliance. I have also some double-faced ones, which are so formed as on one adjustment to allow both cavities to be filled. For isolated teeth having large posterior cavities, a ring of silver may be used, carrying out the same principle in forming the portion which bounds the cavity. I have used the same plan in buccal cavities.

Fig. 2.

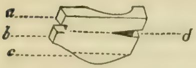


Fig. 3.

The selected matrix should, at the convex edge, be a little thinner than the space between the teeth at their closest part by the gum; it should pass above the edge of the cervical wall, and should conform at this part

* In Fig. 1 the boundary of the right end of the depression should be similar to the other end.

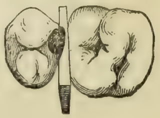
to the contour of the tooth ; the lower and thicker edge should reach nearly to the masticating surface, and this edge should not entirely fill the lower part of the space; above all, the depression at every part of its border should extend slightly beyond the edge of the cavity.

After having secured the cervical part of the case from the encroachment of moisture—which I do by various means, viz., the wedge of wood, little rings of india-rubber, the string dam, short pieces of waxed twine, of such size as to remain firmly in place when drawn between the teeth, the application of dilute chloride of zinc, etc., or a combination of two or more of these means—the matrix is taken up in the pliers (Fig. 3), and pushed upwards until it presses upon the gum or the appliances, and until it impinges tightly between the teeth. It is now wedged firmly against the tooth to be operated upon with little boxwood wedges; these secure it in place during the packing. When the matrix passes up to the proper point, the wedging towards the cavity throws the lower edge against and somewhat beneath the projecting swell of enamel of the neighboring tooth, which adds to the security. However tightly the matrix may fit between the teeth, it will not frequently retain its fixedness unless securely wedged. Boxwood answers for this purpose better than any substance I have employed, for the reason that it is so hard as to be unyielding, and on this account also does not require to be more than pushed into the space. The wedges should be made in quantities for convenience of selection. The pliers (Fig. 3) are adapted to their introduction.

In case the adjoining teeth are not in contact, it is always necessary to introduce a wedge between them, to give greater firmness to the teeth and less discomfort to the patient. In all large cavities I fix the matrix previous to introducing the napkins. Where the rubber dam is required, it precedes this appliance, which may aid in keeping the rubber in place.

For the small cases, the drying is done first, the napkins applied, and a hard rope of bibulous paper is passed against the gum, followed by the matrix. Fig. 4 represents the appearance of the parts at this stage, except the wedges, which are not shown. When the cavity is now examined, it will be found to present an open mouth, formed by its curved lower edge of enamel, and by the boundary of the matrix, through which funnel-shaped opening every part of the space is easily seen and directly touched. The case is now ready for the reception of gold.

FIG. 4.



I use for the upper half or more of the filling, ribbons of Nos. 4, 5, or 6, of slightly adhesive gold, but not annealed. These ribbons are made of one-fourth to whole sheets of foil, depending on the size of the space, and then folded into blocks, varied in length by the requirements of the case. For the lower third I prefer rolled gold of No. 20 to 30, of the

most adhesive character, and annealed. I also use for this part in many cases "Eureka gold filling," No. 15, with the greatest advantage, taking up one or more of the shreds, and working them in wherever needed. The first block or mat is passed up toward the outer border, until it reaches the cervical wall, when the lower end is pushed into place, and fastened by pressure into the upper part of the retaining groove. The second piece is secured in the same manner in the inner or palatal groove; a further piece is forced between the two, and directly against the cervical wall. When a sufficiency of gold is placed upon these parts to save the tooth from contact of the points, the gold is securely malleted against the walls at all points, paying particular attention to the junction of the tooth with the matrix. In this way I proceed, successively introducing and malleting, until the cavity is two-thirds filled, not hastening further at any point, unless the assurance is reached that the gold is perfectly consolidated. At this point I commence and continue the employment of heavy gold; the first pieces of which should be well fixed in the gold previously introduced at the parts over the retaining grooves, and also worked well into the foundation. It is now a simple matter to fill up the remainder with quickness.

In case there should happen to be an encroachment by moisture at near the close of the packing, the gold may be made smooth on the exposed surface, dried, and the latter part inserted, with all the characteristics of a separated filling. The form of the last third is such that, if inserted with dryness, no portion can escape. The matrix should now be removed.

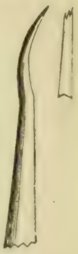
It will be found, if the selection and adjustment of the matrix has been correct, that very little filing and cutting down of the plug will be required, and, in case the packing has been carefully performed, that the gold will be solidly condensed at every part. It will also be noticed that, while the gold is solid, it will not have become hardened in temper on the proximal surface, but yields laterally under the burnisher, not unlike lead or tin.

I must at this point call attention to the importance of the adaptation of the filling material to the cervical wall, which it requires no words to show will be secured by this method. There can hardly be a question that the general failure of proximal fillings is due to one or both of two causes,—the imperfect preparation of the cavity, and the want of solidity and adaptation of the gold at this part. When the filling extends to the gum or beneath it, and the teeth are not permitted to come into apposition here, this portion of the tooth, when well protected, is *least liable to decay, as this is not the place where caries usually commences.* And when the filling reaches to the cementum, the recurrence of caries is still less to be apprehended, since it is a clearly established, but apparently overlooked, principle

that this structure is the least liable of the dental tissues to destruction. It will be noticed how seldom failures occur along the cervical edge of gutta-percha fillings, even when carelessly performed. These considerations have been forcing many to seek for better means of securing adaptation, solidity, and smoothness at this part.

The instruments for introducing the filling are of simple forms and direct action, but they should be in fine condition,—that is, the points should be well serrated, and sharp. The only important modification needed are some pairs of mated pluggers, formed as at Fig. 5, in which one side of the edge is considerably longer than the other, which longer side, in malleting, is constantly kept against the matrix; this effects the greatest pressure upon the margins, and secures with positiveness the perfect fullness and the proper consolidation of the gold at these parts. Several sizes and varied curves of this point are required.

Fig. 5.



The finishing of the case is not different from the usual course pursued. In my own practice I open still further the inner portion of the space, which is easily done with chisels and suitable files. The peculiar form of the depression in the matrix produces a space which is considerably greater on the inner side, and which may be increased at pleasure. In many cases, where the tendency to caries is very great, I chisel quite freely from the inner plates of enamel, doing this after both the adjoining fillings are inserted, cutting down both gold and enamel together, allowing the fillings to touch only at the prominent outer part. The result is then an imitation of the exceedingly oval bicuspid; the immunity from decay of which all must have seen examples.

Fig. 6 represents a transverse section of two cases at a point immediately above the grinding surface, which exhibits the outline of the form of the cavity and finished surface of the gold.

Fig. 6.

In full confidence, founded on sufficient trial, I claim that this method of filling proximal cavities overcomes several of the chief difficulties and deficiencies hitherto experienced, as well as enables greater facility of performance, and the security of excellent results.

I have not mentioned a number of secondary advantages, which I must leave to that class of dentists who alone will adopt this plan, and who are of such capacity as to seize upon all the favorable features of this method, and who will make the indefinite application and improvements of which it is susceptible.

In my own hands it has enabled me to execute with greater ease and with more certainty the large distal cases than I was previously capable of accomplishing, under favoring circumstances, in fillings of equal size on the mesial surfaces.

I feel assured that those who will take the interest to clearly understand the details herein written, will find satisfactory results to follow; and those who are fond of the use of precise means, will find this method indispensable,—at least for large and difficult posterior surfaces,—and may appreciate, as I have, that it is equally valuable in large anterior cases, and at length also a gain in quality of the result in smaller cavities; and finally, will discover that gold for filling teeth is rendered a more tractable material than ever.

I should not conclude without expressing the trust that this method will increase the number of well-performed operations, as it substitutes for processes which are, by the ordinary modes, peculiarly difficult and hazardous, one which, while needing thought and requiring care, is much simpler of execution, and with intelligent application, certain in its results.

Simplicity of processes, and reliability of work, are the two greatest wants in our profession to-day. The feeling is not entertained by a few, that it is high time more thoughtful attention was being given to the means of arresting the loss of the teeth than is exercised by the great majority of dentists. Notwithstanding the number of faithful operators is increasing, and the standard of operations is rising, the manner in which dental work is performed by nine-tenths of the dentists of this country is a reproach to us as a class, and a disgrace to the age. The same deficiencies in any calling, where the people are qualified to make a judgment, is usually expressed by a phrase too inelegant to mention. It is a misfortune that the community has at present no means of forming an intelligent estimation of the work of the dentist—a misfortune for both classes concerned. For the better serving of our clients generally, I have a hope that step by step the introduction of the filling may be made easier, thus within the capacity of a greater number, and more sure, until at length that which to-day is a piece of difficult artisanship may be placed as clearly within the bounds of surgery as the dressing of a wound.

NOTES FOR A MEMOIR ON THE PATHOLOGY OF THE TEETH.

BY A. C. CASTLE, M.D.

Read before the First District Dental Society, New York.

(Continued from page 121.)

SECOND GROUP. YELLOWISH-WHITE TEETH.

In my notes on the first group, the large, dense, yellow teeth, I endeavored to lay before the profession the pathology existing between the dental organs and their sympathetic influence upon the whole animal system, wherein I explained the several curious changes occurring in the dental system; and that these abnormal alterations are the

proximate causes of the numerous remote dento-neuralgic sympathetic pains produced in the face, ears, head, neck, and various regions of the body.

Before proceeding further with my notes, for the character and dignity of my profession, I deem it pertinent to remark that there are *young* fogies as well as "old fogies," whose minds are equally befogged not only for want of experience and education, but from conceit and ignorance. The object of these notes *is not that of pretension*, but in view of attracting the attention and enlisting the educated talent of the profession, and exciting a more exalted *professional* aspiration than will be content to recline under the ignoble appellation (bestowed upon them by a speaker before the New York Dental Society) of being "tooth-carpenters only;" and to show that it behooves every student of the science pertaining to the dentist's art, to apply his intelligence in searching out and unraveling the pathological phenomena connected with the dental organs and the animal system; and not to accept babbling boasting as a proof of scientific experience—that rotting teeth can be made perfect, and to last forever (which, by the way, periodic family dentists' bills practically contradict); like that ancient boaster and celebrated *insurer of lives*—longevity—Theophrastus Paracelsus, who pretended to possess "the stone of immortality," yet died in his fiftieth year.

No matter—*laudatur ab his, culpatur ab illis*—or, in other words, for us to exercise the faculties with which our Creator has endowed us, whereby the hidden truth may be fathomed, and true knowledge and experience unfolded, by which we may be enabled to adapt a correct treatment; which, if it do not partake of the impossible character, at least may lead to the conservation of the teeth even to good old age. It is much to be regretted, nay, lamented, that we so often see the melancholy exhibition of the *many* whose opportunities are so frequent and brilliant, not only casting aside the proffered gem of observation, but actually closing their eyes, and ignoring their perceptive powers of comparison and description in favor of their *mechanical* view, that *their* mechanical manipulation of the teeth, and *their* mechanical method of filling holes in rotting teeth, with a foreign material, regardless of all pathological conditions, all constitutional diatheses, and all changings of character in the dental organs themselves; yet, like Paracelsus' stone of immortality, they will make the teeth live forever. How truly Shakspeare speaks when he says:

> "In all, designs begun on earth below
> *Fail in the promised largeness;* checks and disorders
> Grow in our veins of action highest reared,
> As knots—by the conflux of meeting sap—
> Infect the sound pine and divert his grain
> Tortive and errant, from his course of growth."

Dullard indeed must he be who does not perceive that the Architect of our nature, when he elaborated our wonderful working animal system, did not place *less* importance upon the physiological intentions of the fifth pair or dental nerves and their numerous branches, than he did upon the second pair, or optic nerves, or the seventh pair, the nerves of hearing.

The professional status of specialists treating the local pathological affections of "the eye and ear," in connection with constitutional medical and surgical treatment, is acknowledged by the medical faculty, wherever the science of medicine and the surgeon's art are practiced. The highest order of medical erudition and practical experience is demanded of the oculist and aurist to enable him to treat these organs successfully. With these credentials they are recognized by the medical profession, and accepted by the community, as important auxiliary branches to surgery and to the healing art.

May I ask why, or how, it is that the educated dentist does not command the same professional appreciation and respect of the medical faculty and the community at large? The answer is readily made. Because the majority of the dental profession are content to impress upon them the *mechanical exaltation* which they receive from their personal patrons!—as the *alpha* and *omega* of surgico-dental excellence; that the condensation of dento-professional accomplishments exists solely in their individual method of filling carious teeth with gold or amalgam, the uniqueness of which method will make them last forever. Surgeons, physicians, oculists, aurists,—and even dermatologists,—nor chiropodists, nor advertising quacks,—do not thus commit themselves. Thus by dentists themselves the public is educated to think,—urged into the belief, and *impressed with the one idea*—that the dentist's art extends no further than mechanically filling holes in decayed teeth, extracting and making artificial "dentures" substitutes. Mechanical art requires no learning; it requires no erudition; while it brings ready money. But erudition, professional learning, and professional status are boasted of, as adjuncts, as an artist is compelled to place his picture in a gilded frame; *but they do not pay* like mechanical dentistry! Besides, education costs *time, brains*, and *money;* therefore the mechanical dentist ignores professional learning as unnecessary, and pins the faith of the public not upon his professional acquirements, but upon his mechanical tooth fillings as he fills them. With singular contradiction, the same public does not hesitate to be physicked for their eyes and ears by the oculist and aurist; and poison their hair with destructive dyes and "bleachings," and paralyze and destroy their eyes with *belladonna;* and be fleeced by the dermatologist, and even to be patented into their graves by vile quack medicines; yet this same public will not take a prescription from a dentist unless it be a fifty-cent bottle of "detergent

tooth-wash," or a box of tooth-powder. That I do but speak the truth, read how I am sustained by the statement of G. C. Daboll, M.D., published in a Western journal:

"At no time," says this gentleman, "in the history of dental science, has the profession made such sure and rapid progress as since the inauguration of dental societies. This progress cannot be attributed to 'dental schools,' for *not one* dentist in a hundred ever attended one. In the clinical department the dental association takes the character in a measure of a dental college; it has been the only school for many a good operator of to-day." There is a dentist in this city that never went to school at all. He says that dental colleges and dental associations are humbugs. Teeth must be filled as he fills them, and they will last forever.

The city of Baltimore and the city of Philadelphia have the honor of having inaugurated dental schools, and to the zeal and accomplishments of their several professors the dignity of the profession is indebted for the name of "American Dentist" being respected in every part of the world where he may make his appearance. To these collegiate dental schools the United States are eminently indebted for the general advancement of dental professional learning, experience, and improvements in the science of the dentist's art. From dental schools have been distributed the *pabulum* which has fed and is feeding Dr. Daboll's "hundred" that never attended school. Numerous railroads lead and point their tracks to the portals of the Baltimore and Philadelphia dental schools, where dental professional instruction is open to them. The sooner they matriculate the better for themselves, and certainly the best for benefiting the teeth, and their sympathies of an enlightened public; and the sooner scholastic dental education is rendered a necessity, the sooner the professional dentist will be acknowledged to be an equal professional with the oculist and aurist.

The efforts of our dental schools must teach the public mind that the art of the dentist is something more than mechanical. It is a serious misfortune to medical science, as it is an opprobrium upon the dental profession, that so little, if any, attention is devoted to acquire an acquaintance with, and a knowledge of, the symptomatology of dental pathology. The physician is content to leave the apparently to him insignificant, undignified, rotting teeth to the *mechanical treatment* of the dentist, entirely ignorant of the many severe, remote sympathetic symptoms which he, when "called in," treats as idiopathic derangements of the regions of the body complained of by the patient. The dentist is content to treat carious teeth, as mechanical organs, mechanically; he, with the physician, being equally innocent of their remote sympathetic and symptomatic affections.

The second group, the yellowish-white teeth, in the order of dental

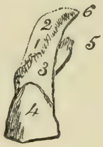
pathology, are possessed by that class of people of cholerico-sanguine and phlegmatic-sanguine temperaments. These teeth contain more gelatinous tissue or constituent, consequently they are whiter in color and less dense in their bone and enamel structure; hence they are more delicate in their nature, compared with the first group; and although not so solid, they still present a firm, strong appearance, while their size and lineaments display a softer and more pleasing expression to the "human face divine." It is with difficulty that the first class of teeth can be cut, filed, or drilled into, with the finest-tempered steel instruments. These teeth, on the contrary, although constituted with a high degree of hardness, more readily yield to the mechanical appliance of dental instruments. They are more easily acted upon by the gastric acids. They decay more rapidly, the mortified part being moist, sometimes soft, of a dirty light-brown color, while the decay in the first group is a yellow-brown color, dry, disintegrating rot, rough and stringent to the tongue, and resembling the *dêbris* of the tan-pit. The softer enamel and bone of the second class, of course, can be cut, drilled, filed, and carved into, with more ease and with greater facility.

The *dens sapientiæ*—wisdom teeth—unlike those of the first group, which invariably exhibit a perfect condition, often make their appearance defective in their organization; the defect is confined to the central depression in the masticating surface. These imperfections speedily run into decay, producing neuralgic symptoms of less or greater intensity either in the cuspidati, bicuspids, or in the anterior molar teeth, where the bicuspids are absent. The symptoms are various, from a simple headache to uneasy sensations of a tingling, creeping nature; a sensation of tightness, or pulling, or diffused soreness over the scalp; acute paroxysms of lancinating, shooting pains in the right or left temporal region, in the right or left ear, or a dull aching to acute neuralgic distress at the back of the head, and down the nape of the neck. In severer symptoms, the paroxysms extend to the supra-orbital nerve, above the eye and extending to the forehead; to the sub-orbital nerve, under the orbit of the eye, to the cheek-bone, extending to the face—the "*tic douloureux*" of the French—and sometimes to the nose, causing chronic catarrh of this organ; spasmodic stricture of the gullet—pseudo-gastralgia; in the right or left eyeball attended with motes, webs, and congeries of snake-like formations of various sized rings, small, black or transparent disks, with occasional brilliant scintillations of nervo-electric light, vulgarly known as "seeing stars." These dento-neuralgic, sympathetic symptoms are invariably treated as *amaurotic* affections. Then an acute concentred pain on the apex or "crown" of the head; prickling and tingling or creeping sensation in the arm, forearm, hands, or fingers, which are treated as paralytic symptoms. In many cases, however, the sympathetic pain of diseased wisdom teeth is confined to

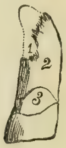
the anterior bicuspid tooth, and, where it is absent, to the anterior molar tooth. These are the sympathetic pains which for illustration I limit to the head, neck, and arms only. A remarkable diagnostic characteristic denoting the exciting cause specially referring to the above-named regions, is that *the sympathetic pain is always on the same side as the affected tooth*, and, as a rule, *never passes over the mesial line of the head and face to the opposite side.* It must be borne in mind that no pain is experienced in the wisdom tooth itself during these paroxysms, or at any other time of intervals.

The illustration represents the central incisors of a young lady, 4th class teeth, treated for five years medically for ozæna, catarrhal neuralgia, and neuralgia of the supra-orbital nerves. Fig. 1, right incisor: 2, the original form of the root; 1, the serrated edge; 3, the remaining portion of the fang; 4, body of the tooth, lateral decay; 5, bone node-exostosis; 6, apex absorbed. Fig. 2, left incisor partially absorbed: 1, hollow into which the node of fig. 1 fitted; 2, remaining serrated fang; 3, decay in the anterior face and neck of the tooth.

1.



2.



The teeth are sometimes in sympathetic affection with constitutional irritability, or nervous depression; in either case relapsing fever is the attendant, so mild in its character as to be simply characterized "feverishness" or "cold;" but sufficient, however, to affect the action of the heart, and implicate the mucous membrane of the *primæ viæ* and skin, with general muscular debility—perhaps better understood by the popular description, "running down of the system." The mucous membrane of the mouth presents the index, which, with the gums is swollen by sub-effusion partaking of the emphysematous character; they are of a deep red, or pale color; the gums are flaccid and covered with a viscid mucus, and hang loose against the teeth. The teeth are partially loosened from their positions by the thickening of the alveoli periosteum within the sockets. Sometimes a watery exudation of acid character eats into the necks of the teeth; at other times an acid pus is suppurated from the edge of the gums, which is the cause of much local distress; while the functions of mastication render them very painful. The teeth spread apart from each other, and in connection with the gums are exquisitely sensitive, whether by the presence of sweetmeats, acids, surgico-dental instruments, teeth-brush, and even drawing the breath upon them. A soft, viscous, mixed salivary calculus is largely deposited upon them.

The same indented formation is observed in this as in the first group, but with more natural fissures in the enamel of the masticating surface, which too often meet with the same infamous usage as those in the first group, by having auger-holes bored into their substance, and the removed

healthy enamel and bone replaced with a foreign material, proposed as a *mechanical* prophylactic against the action of *chemical* agents and future decay.

Exostosis, or dental *nodes*, show themselves particularly upon this group. Exostosis differs in a measure from the hypertrophied conditions of the teeth, inasmuch as the latter exhibits almost a uniform swelling of the enlarged bone; the nodes present hard, circumscribed, round or oblong, knotty tumors, formed near to or upon the apices of the fangs. An interesting specimen, unique of its kind, I recently exhibited before the New York Dental Society. It was, as it were, the anchylosis of the inferior wisdom tooth and the two adjoining molar teeth. They were united by solid, continuous, conglomerated, nodular bone excrescences, presenting a formation as if the teeth had taken root in a young bone-reef. The wisdom tooth and posterior molar tooth, years before their extraction, had been filled with gold, which still remained as perfect as when first introduced into the teeth.

Under certain constitutional aberrations occurring in the system, the mucous membrane of the *primæ viæ* secretes a peculiar acid, by the chemical action of which upon the metals placed in the hollows made, or in the carious cavities formed in the substance of the teeth, an electro-galvanic impression is produced upon the dental bone, nerves, blood-vessels, and periosteum, at each and every period when the mucous membrane is brought into the condition to produce and secrete this acidified mucus. The process, therefore, is intermittent and slow, consequent upon the intervening periods of health, alternating with the periods of functional or organic disquiet. From this incertitude of action, years often elapse before the effects are recognized. For very many years this electro-galvanic action of metals has been recognized by dentists in connection with artificial teeth set on metallic bases. The mischief often done to the remaining sound teeth is patent to every dentist. But they have never taken the trouble to investigate the matter, and certainly they have never devoted a thought to the electro-galvanic action of metal fillings in carious teeth. And here again we observe how nature deals out her opposites, although excited from the same cause. First, the electro-galvanic action produces a super-excitation of the dental absorbents, which suck away portions of the apices of the fangs, leaving sharp, needle-like spiculated points, which are the immediate cause of various irritations,—alveolar periostitis, abscess, tumefactions, and pains in the jaws, etc. The second electro-galvanic super-excitation stimulates the dental nerves and blood-vessels into an extra nutritive effort, and exostosis of nodular bone formation upon the roots of the teeth is the result. Sometimes we observe both the absorbent and nutritive forces acting together upon the dental roots; on one side the absorbents suck away the substance, while on the other side

exostosis is forming nodes of bone, as if nature would replace that which she is taking away. These enlargements upon the fangs of the teeth cause corresponding absorption of the alveoli sockets, to make space for these protuberances extending from the fangs, which not unfrequently cause a thickened and permanent induration of the alveolar periosteum; oftentimes forming painful tumors, but most frequently chronic ("gumboils") fistulous openings, which heal and ("break") suppurate at various indefinite periods. (See *Figs.* 1 and 2, page 181.)

And thus when the innocence of mechanical art engages in a contest with nature's perfection of healthful organization, no rhetoric of the pen, nor the logic of reason, is required to explain the results of mechanically applied causes of irritation. There is but one state of health. It is more mathematically sensitive to changes than even the best equalized balance; and if anything is forced against the equipoise of perfect, healthy organs, whether against the stomach or the teeth, etc., nature resents the outrage made against her immutable laws by producing deviations not in favor of the disquieted organs; and thus we find that exostosis forced upon healthy teeth whose fissures had been unnecessarily tampered with.

As with the first group, the gums and dental periosteum are subject to acute, subacute, and chronic inflammation. In the majority of cases the chronic affection is passive loss of tone. In the first form the dento-maxillary periosteum descends into the suppurative condition, receding from the fangs and from the alveolar ridge, beginning at the molar teeth on one side, and traveling round the jaw to the corresponding teeth on the opposite side; occasionally implicating the periosteum of the whole maxillary bone. The periosteum then recedes from the fangs of the teeth, and leaves the alveoli denuded; the teeth stand loosely attached in their now diseased periosteal bed, and ultimately fall from the jaws in an apparently sound condition; but, upon examination, the fangs present a semi-transparent appearance produced from causes already mentioned, and the maxillary bone will be found partially honeycombed from the action of the absorbents. This is sometimes diagnosed for malignant disease.

Irregularities or mal-alignement of the teeth here assume a more marked derangement. It is the generally accepted opinion that deficiency of space or contraction in the maxillary bones is the reason why the teeth cannot be admitted into their uniform positions in the maxillary circle. A remarkable natural consistency presents itself in the conformation of infant jaw-bones and teeth. Never, unless in deformed, rickety children, or in cases of *mollities ossium*, so far as my extended experience serves me, do we meet with malformed jaws or dental irregularities in the first dentition; and it is rare, indeed, that we ever find any deviation, as far as regards the circular space, necessary to the

symmetrical arrangement of the teeth in their maxillæ. But we do find deviating malformations and malconformations in the maxillary bones and the alveolar processes in adults—that is, in the second dentition—which cause the various "irregularities" I speak of.

It would appear that the alveolar processes are mere auxiliary ridges of bone sockets, intended for the time only that the teeth remain in their positions; that upon the removal of the teeth from their sockets, whether by disease, accident, or surgically, the absorbents are immediately brought into action, and do not cease until they are entirely removed; and by an opposite action again the periosteum secretes a smooth bone covering in the place of the absorbed alveolar processes, so that the non-anatomist, ignorant of pathological and physiological compensations, would never suspect that teeth had crowned the smooth, rounded surface of the maxillary bone.

Dental associations and authors have always dwelt with particular emphasis upon contractions of formation of the maxillary bones, as being the cause of the deviating and crowding irregularities of the teeth from their natural symmetrical positions. Contradicting this singular anatomical error or oversight, upon even superficial examination, it will be seen by ocular demonstration that the maxillary bones—*upon which the alveolar processes or sockets are formed and placed*—are always of proper proportions, and of ample dimensions for the perfect arrangement of the teeth.

Analytic chemists furnish us with elaborated analyses of the bone, the enamel, and the crusta petrosa of the teeth,—as they do of the blood,—but no two chemists agree as to the mathematical composition of each part. Their figures and quantities all vary. The reason is obvious. Examine the character of the four groups of teeth I have named by separate chemical analysis, and each group and each subdivision will demonstrate different analysis of constituent atoms. The alveoli partake of these differences. All this time we are constantly reminded by unpractical theorists of the atomizing, cellular, and molecular germinations, arrangements, and combinations of nutrition that are called upon to make the rudiments into the ultimate formation of the teeth. Vigorous, healthy, natural formations assume, in their order, their intended natural proportions and symmetry. Weak or delicately constituted teeth and alveoli deviate from the intended normal proportions both as regards size and outline. These influences produce their effects, first, upon the physical character and outlines of the jaw-bones,—which are always ample,—and then upon the alveolar processes, which are either protruded forward or contracted inward of their circles at angles of abnormal inclinations; the latter producing an aberrating space that will not permit them to contain the now overcrowding teeth in their order of symmetrical alignement. Thus, with a very little

observation bestowed upon this phenomenon of construction, the peculiar dynamics affecting them will demonstrate the character of each irregularity of the alveoli, and the consequent derangements of the teeth.

To render my remarks more clear. The examination of the infant skeleton maxillary bones, displaying the progressing second dental forming organs behind the first dentition complete, will illustrate an apparent intermixing of bundled portions of half made-up teeth. How they are conveyed to their distant positions, alignements, and meet together in their beautiful conformations of articulation, I must leave to the erudition and philosophy of Dr. Daboll's hundred scientific dental experts, who have never been to a dental school, to explain. They will do it!

The conformation of the upper jaw-bones makes the foundation of the face. Unlike those of the lower jaw, the alveolar processes spread or diverge in conical shape from the palato-maxillary bones at an angle similar to the inverted letter ʌʌ. To conform with this outstretching, radiating formation of the alveolar processes and teeth of the upper jaw,—while we observe the anatomical *necessity* of the lower jaw being all spacious and capacious to form a recess for, and to allow the free action of, the tongue and muscles within their osseous circumvallation,—we also observe that the outward circular dimension of the jaw is too great, if the teeth were articulated *upon* the maxillary bone proper, to meet even the outstretching, antagonistic teeth of the upper jaw. We, therefore, find that the alveolar processes of the lower jaw are formed with an *inward* inclination, which, with the prolonged inclination of the teeth, shows by a plumb-rule from the inner edge-line of the corona of the molar teeth that their masticating surface line is inside of the maxillary ridge proper from one-third to three-quarters of an inch.

The deficiency of space, then, caused by the increased inward inclination—less or more—of the dental processes, clearly explains the cause of the physical deformities, while it mathematically illustrates the disarrangements of the teeth. The lower jaw of the first group of teeth, in many instances, presents the "bold, *square* jaw," in which the central incisors and the two cuspidati partially lap the two lateral incisors, in consequence of the squaring of the alveolar circle in harmonizing its formation with the maxillary bone. In the second group of teeth, in addition to this slight irregularity of the teeth in the lower jaw, the two superior lateral incisors overlap, or underlie, the central incisors of the upper jaw. As a rule, these are the only irregularities affecting the symmetrical arrangement of this group of teeth in the robust, healthy, constituted organizations. In the third and fourth groups of teeth we observe the large protuberant alveolar processes,

with large protuberant teeth projecting even beyond the thick, deep, ponderous lips of these constitutional organizations.

The ethnologist, with little trouble, will arrange in their relative order the crania, maxillary bones, alveolar processes, and teeth apart from their distinguishing marks of the different races of men; and he will observe the persistent influence of education upon the sensorium, and thence upon the organic nerves, and the nerves of expression,—*i.e.* lineaments. The mountaineer, hunting the chamois, differs in physical aspect from the fisherman on the coast, the highlander from the low-lander, the husbandman from the sailor, the nomad from the settled tribes.

In all semi-barbarous and savage races of men, the South Sea Islanders, the New Zealanders, the Malays, the *anthropophagi* to the insect-eaters, the Africans, the American aborigines, and others, the maxillary bones are of ample anatomical development, which, with the well-defined, firm, decisive, symmetrically arranged teeth, present an illustrative index of the thorough organization of their animal system. It is with the ascending gradation of education, and the vices of civilization, that we observe the series of pathological digressions of expression in the dental organs.

> "With curious art, too finely wrought,
> Preys upon herself, and is destroyed by thought."

EXPERIMENTS WITH GOLD.

BY J. S. LATIMER, D.D.S., NEW YORK.

Some two years since, after a conversation upon the relative merits of the different forms of gold and upon mooted points in their manipulation, it was determined to institute a series of experiments with a view of testing the generally received ideas, and of learning something new.

Submitting the plan to Mr. E. G. Kearsing, he generously offered to furnish the gold foil, and has taken the liveliest interest in the experiments.

I furthermore desire to acknowledge my indebtedness to Arthur Mead Edwards, Professor of Chemistry in the Woman's Medical College of the New York Infirmary, for valuable aid in obtaining specific gravities, and to Dr. R. W. Varney, who assisted me in many ways.

We packed thirteen plugs of gold foil, one of Watts' crystal gold, and one of platinum and gold, formed by placing a sheet of heavy platinum foil between two sheets of thinner gold foil, and beating or rolling together with frequent annealings.* The cavity into which the plugs

* Later, Mr. K. united two bars of gold with one of platinum by "sweating," and then rolled them to the right thinness.

were packed is fourteen one-hundredths of an inch in diameter and four-tenths of an inch in depth, formed by drilling into two pieces of steel placed together, so that half of the cavity is in one piece of steel, and the other in the second piece. The steel mould was screwed together during the packing. I tabulate results as follows:

No.	Thickness of Foil.	Annealed.	Unannealed.	Crystal Gold.	Single thickness.	Folded into Ribbons.	Folded into Mats.	Packed at one sitting.	Packed at two Sittings.	Adaptation Scale 1 to 10.	Pounds required to break.	Specific Gravity.	REMARKS.
1	6	"					"	"		1	27½	15·441	Packed with mallet-force, and a rather coarse point and serration.
2	6	"					"	"		8	51	18·544	Packed with mallet-force, and a small and finely-serrated point.
3	6		"				"	"		10	12	19 020	Packed with mallet-force, and a small and finely-serrated point.
4	6	"					"	"		2	37	16·230	Packed with mallet-force, and a point with three coarse and deep serrations.
5	2	"					"	"		8½	43	18·437	Packed with mallet-force, and a small, finely-serrated but worn point.
6	2	"				"	"	"		3	10	17·266	Packed with mallet-force, and a larger and finely-serrated but worn point.
7	10	"				" &	"	"		4	42	18·934	Packed with mallet-force, and a small and finely-serrated but worn point.
8	10	"				" &	"	"		7½	59	19·050	Packed with mallet-force, and a small and finely-serrated but worn point.
9		"		No.2				"		9	65	18·230	Packed with mallet-force, and a small and finely-serrated but worn point.
10	20	"					"	"		8	95	19·975	Packed with mallet-force, and a small and finely-serrated but worn point.
11	20	" &	"				"		"	6	7	18·115	Packed with mallet-force, and a small and finely-serrated but worn point.
12	2	"				"		"		9½	120	19·445	Packed with mallet-force, and a small and finely-serrated but worn point.
13	10	"					"		"	9	41	18·049	Packed with mallet-force, and a small and finely-serrated but worn point.
14	120	"			"			"		9	97	19·522	Packed with mallet-force, and a small and finely-serrated but worn point.
15	150	"			"			"		8½	109	21·250	Packed with mallet-force, and a small and finely-serrated but worn point.

The strength of the plugs was tested by resting their extremities on two fixed points, and suspending weights from their centres by means of a thin but strong wire.

The specific gravities were so surprisingly large as compared to those given in the books for pure gold (19·3, Roscoe; 19·4, Fowne), that I have hesitated to publish; but, after they had been taken again and again, with no improvement of the figures, I have decided that the profession shall have the results of our labor "for better or for worse," as they take their wives. If some one of my readers shall be stimulated to undertake experiments in the same direction, and shall contribute his results to our common stock of knowledge, I shall feel abundantly compensated.

So far as the strength of the filling is concerned, it appears that small portions of gold, well annealed, integrate and cohere better than larger masses.

It would seem, too, that the thickness of the foil has little to do with the strength of the plug, for, while a plug made of ribbons, of No. 2, stands highest as to strength, one made of No. 120, and a platino-gold of about No. 150, follow next in order. If we had before cherished the idea that very loose pellets or sections of rope were capable of being more thoroughly welded than parallel laminæ of foil could be, these experiments would be amply sufficient to disabuse our minds on that point; besides which, it seems evident to us that the latter method is the more methodical: the gold is already in a good condition for condensation, the sections of ribbon or flat "mats" keep the surface of the filling more nearly uniform, and, in packing into narrow crevices or pits, the view of the cavity is less obscured than by the bulkier pellets or sections of rope; hence the greater certainty of result.

The plug of crystal gold, which, when removed from the cavity, presented an exact impression of every inequality of the walls of that cavity, proved, when tested all over its surface with an absolute point, to be quite unequally dense. It has seemed to me that to the crystal, the "fibrous, the plastic," and other loose-structured preparations of gold, the objection might reasonably be made that plugs made of them were likely to appear better than they really were; and it has occurred to me that possibly to this cause might be due the blueness noticed about so many apparently excellent crystal gold fillings.

Some may be surprised that the platino-gold (experiment No. 15) should weld so thoroughly as to enable a plug of such dimensions to require for its fracture so considerable a weight as one hundred and nine pounds.

For a very long time it was supposed that platinum could be welded only at a white heat, but the late Professor Faraday succeeded in welding two clean pieces cold by placing them together on an anvil, and beating them with a hammer. Besides the function of keeping the surfaces of platinum free from foreign bodies, it is likely that the gold is often driven through the platinum by the plugger-point, and in this way integration and cohesion of the mass is assisted.

A moment's consideration of the form of the cavity will enable any one to perceive the fact that in so narrow and deep a hole, we necessarily labored under difficulties greater than most of those found in practice, so far as adjustment to the walls and strength of plug are concerned. It is plain that if the laminæ of foil could have been packed lengthwise, instead of transversely, of the cavity, the plug would have been very much stronger.

Thoroughly aware as I am that one course of experiments, such as described, can prove nothing conclusively, I yet trust they may not be wholly devoid of interest and profit to all who carefully peruse and consider them.

SENSITIVENESS OF DENTINE.

BY C. A HASTINGS, D.D S., RIO DE JANEIRO, BRAZIL.

In Mr. Schrott's researches on the inhabitants of the mouth, he says:

"The largest of the vibriones reach in the section to $\frac{1}{1000}$ of a millimetre, and can well be seen by a magnifying-glass of 500 diameters; but those of the denticolæ do not reach one-tenth of these. The diameter of the dentinal canal is $\frac{2}{1000}$ to $\frac{5}{1000}$; therefore they are $\frac{20}{100}$ times larger than those of the denticolæ; so it is very easy to explain that in a small piece of carious tooth there can be such innumerable living creatures to which the entrance to the dental pulp is open."

In reading the above paragraph, I was struck by the difference in diameter of the dentinal canals and vibriones, so that I would like to put forth the following question, hoping it may elicit discussion from which some benefit may be obtained towards the advancement of our specialty.

Is not the sensitiveness of dentine caused by the crowding of denticolæ into the dentinal canals, on being disturbed by an instrument or other exciting cause, they being led to do so from instinct of self-preservation, thereby causing pressure on the pulp, and consequently pain?

I have considered this seriously, and have come to the conclusion that there is some foundation for this theory from what I have observed in practice.

The most sensitive cavities are approximal and buccal; the denticolæ are less liable to be disturbed in them; they can live and propagate till some foreign agency makes them resort to the canaliculæ. Large open cavities in molars, as a rule, are not sensitive. This can be accounted for in two ways: First, by the protective influence of nature, which produces a protection to the pulp by blocking up the dentinal canals with a deposit of secondary dentine, thereby preventing the entrance and pressure the denticolæ might exert on the pulp; second, owing to the widé opening, there is a continual change of saliva which washes out the cavity, preventing the denticolæ from accumulating in large quantities, as would likely take place in a more protected position.

IODINE STAINS.

BY D. M. C., BOSTON, MASS.

To take iodine stains out of napkins: wet the fresh stain with cold water, and apply aqua ammonia.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

BRITISH JOURNAL OF DENTAL SCIENCE.

Dr. Charles S. Tomes is contributing a series of papers on "Antiseptics used in Dental Surgery," and thus writes of the applications of Phénol Sodique:

"It has been tried chiefly as an application after extractions, and has been found to be of use in two classes of cases: the one, those where extreme pain has followed the removal of a tooth, whether from an abnormal irritability of the dental nerves, as may often be seen after the extraction of a tooth which has been the cause of neuralgia of long standing, or from the employment of unusual force and consequent bruising of the tissues.

"In these cases the alveolus should be lightly wiped out to remove coagula, and a loosely rolled pledget of wool, freely saturated with undiluted phénol sodique, pressed down into the alveolus; an excess of phénol sodique, squeezed out in passing the wool down into the vacant socket, will do no harm to the surrounding tissues. This application gives little or no pain, and generally gives most marked relief.

"The other class of cases, where it has been advantageously used, is where an unhealthy gum has been of necessity much lacerated in extracting a tooth, and from the constitution of the patient ulceration and sloughing of the lacerated edge are likely to occur. In one such case the stumps of the first lower molar were removed on each side of the mouth, both being much broken down; phénol sodique was applied on one side only, and on this side the gum healed rapidly, while on the other it took on unhealthy ulceration, which lasted for ten days. Of course the patient must be cautioned to remove the pledget of wool the same evening; in many cases, however, I have found relief of pain to be effected by leaving the wool in the socket for ten minutes. One objection that I anticipate will be urged against its use is, that it prevents the socket from being filled up by coagulum; this objection is, however, easily disposed of, for the coagulum which fills a socket becomes in great part softened down and decomposed before it has had time to become organized, and so the greater part of the coagulum contributes little or nothing to the filling up of the socket by organized tissue. Moreover, the phénol strongly coagulates any blood with which it comes in contact, and so effectually checks bleeding."

CANADA JOURNAL OF DENTAL SCIENCE.

"*To Prevent Rubber Bands Slipping.* By X. Y. Z.—In using rubber bands for regulating teeth, it often happens that they slip down too far on the neck of the tooth, and not only cause intense pain by the pressure on the soft and sensitive tissues, but to a certain extent prevent the direct and proper force required, by being so far from the point of the crown. To prevent this slipping of the bands down upon the gum, I paste oxychloride of zinc between the teeth and where the bands are to go between, and before it hardens slip the bands up into place and

into the paste, and adapting them as required, put in more paste, keeping all dry until hard. In this way I insure the steadiness and comfort of my rubber bands, and do not grudge the little trouble of repeating this whenever I have to change them. I find this particularly useful in cases where I draw irregular teeth into position with bands alone."

American Journal of Dental Science.

Dr. S. J. McDougall gives the following instructions for making a "Flexible Edge for Rubber Plates:"

"Have soft rubber rolled in sheets long enough to extend around the entire plate. Make your calculations on the model how far up and back you wish the plate to extend. Cut a strip of the flexible or soft rubber the desired width, run it around on the model and stick it there (rubber dissolved in chloroform answers a good purpose). Of course the upper and posterior portion of the flexible edge forms the upper and posterior portion of the plate.

"Now, with the trial plate on the model, wax up to, or a little above, the lower edge of the flexible strip. When putting the case in the flask for packing, imbed the flexible strip in plaster, so that, when the halves of the flask are separated for packing, the flexible strip will remain on the model. Pack and vulcanize.

"The great objection to this kind of work is, it will last only from six to eighteen months."

Dental Register of the West.

Dr. Geo. Watt thus discourses on "Mistaken Impressions on Nitrous Oxide:"

"In the January number of *The Cincinnati Lancet and Observer*, the leading communication is from the pen of W. W. Dawson, M.D., of Cincinnati. It is lengthy, interesting, and shows commendable research. In the main we like it, but must call attention to an obvious error in its teaching, which we the more cheerfully do, as Dr. D. and the writer are natives of the same hazel thicket—a most delectable place, where the trees grow a little taller, the sun shines brighter, and the birds sing clearer than elsewhere.

"In speaking of nitrous oxide, Dr. D. says: 'Its safety depends on the fact that persons are kept under its influence but for a moment. Protract its administration as we do chloroform and ether, and its victims would far outnumber those of all the anæsthetic agents combined. No surgeon or physician who has stood by and witnessed a dentist give nitrous oxide for the extraction of teeth, would be willing to hazard any individual under the full influence of this gas, for an operation that would last *one half minute.* The appearance of the person while inhaling, as he is pushed beyond the point of excitement, to a condition of insensibility, is fearful; the pulse is quick, the breathing labored, the vessels of the face and neck are turgid, the face assumes an ashy hue; indeed, the whole aspect is one of danger.'

"The above is a graphic picture of a series of rather formidable symptoms, and probably falls even short of the reality, as seen by Dr. D.; but as we have spent more months than he has minutes in the investigation of nitrous oxide, it will not be considered presumptuous if we 'show unto him a more excellent way.'

"For nearly three-quarters of a century, experiments with nitrous

oxide were conducted mainly by adventurous mountebanks and self-styled 'professors,' who administered to the patients their own breaths and something else, the composition of which was unknown alike by professors and victims. Even the experiments of Sir Humphry Davy are almost valueless, from the fact that in all of them the breath was re-inhaled with the gas. Even as lately as the fall of 1866, the 'Colton Dental Association' practiced this method, giving the gas from rubber bags; and not far from this time, Mr. Colton, in an article published in one of the dental journals, advocated the re-inhalation of the breath, as necessary to complete anæsthesia. As far as we know, this mode of administration was then in very general use.

"With such administration, the symptoms detailed by Dr. D. will be often observed; but it is *carbonic acid*, and not nitrous oxide, that causes them. And it has been a view from this stand-point, that induced Dr. Richardson to make the remark quoted by Dr. D.; for it is true from no other. Richardson's remark is as follows: 'It cannot be too widely understood, that protoxide of nitrogen is not an *anæsthetic*, in the true sense of the word, but an *asphyxiating agent; that its effects are identical with those of poisoning by carbonic acid gas.*'

"It is not likely that a greater amount of error could be embraced in so short a sentence, as the oxide *is an anæsthetic*, and will *revive an asphyxiated patient more promptly than atmospheric air.*

"But Dr. D, or some one, may say that these symptoms have been seen where valved inhalers have been used. This is true; and carbonic acid is the agent producing them still. During the first few inhalations of nitrous oxide, carbonic acid is given off in great abundance, so as to almost smother the patient when proper precautions are not observed. The exhaling valve is nearly always far too small; and when the expiration is retarded in this, or any other way, much of the carbonic acid passes back into the circulation. A disposition to economize gas, and a belief (from erroneous teachings by those who should have known better) that atmospheric air must not be admitted to dilute the gas in the air-cells, result in the poisoning of many patients by the return of carbonic acid to the blood, in obedience to the law of gaseous diffusion. In this way the symptoms may be almost the same as if the gas were administered in connection with the breath.

"But if the operator will bear these facts in mind, and will admit fresh air, as freely as wanted, whenever the breathing is in the least disturbed, it will be but a short time till the patient will prefer the gas to the atmosphere, and his breathing will be perfectly tranquil, and in a few minutes he will be wide awake, even while breathing nothing but the nitrous oxide; and through all there will be nothing like asphyxia or suffocation, and the heart's action is changed only by mental emotion, if changed at all. It has been breathed many times for fifteen or twenty minutes, without any change in the pulse.

"We have administered the gas almost daily, and often many times a day, for months, without seeing the complexion darkened, the face or neck turgid, or the muscles rigid. In a majority of the cases the patients were tranquil throughout, not delirious, and often completely anæsthetized, while perfectly conscious.

"If, however, sufficient attention is not given to the expiration, and carbonic acid is allowed to pass over, there will be muscular contractions and delirium, with darkening of the complexion—in short, the formidable array described by Dr. D.

"It is the practice of many to prop the mouth open with a cork, or a wooden block, before administering the gas for extraction; and, if the patient is to be drugged as above, with carbonic acid, this precaution is, perhaps, necessary, as the flexors will be generally found rigidly contracted; but in the light of science, the practice is both barbarous and unnecessary. When pure gas has been properly administered, the under jaw will be perfectly manageable. We never prop the mouth open, and find no occasion to do so.

"But this is too long. Again we repeat, *if the complexion has been darkened, impure gas has been used, or the patient has been smothered.*"

PROCEEDINGS OF DENTAL SOCIETIES.

NEW YORK ODONTOLOGICAL SOCIETY.

At the last meeting of the society, held November 15th, the following brief essay was read by one of the members, on "Preparation of Cavities."

Thoroughly cleanse the teeth, if needed, as is most likely the case. Medication, if used at all, to allay pain in excavating, ought to be made use of early. The common method of partially preparing, and *then* applying remedies in *hopes* of lessening the suffering, I have no patience with. Having little or no faith in local applications other than a *keen edge vigorously applied*, scarcely anything else is used at my hands. Wash out the cavity with warm water, dry, and look at it. If the pulp is not then exposed, it is an inexcusable blunder, unworthy a professional man, if it becomes so during the operation. Cut away the margins as far as required, for strength or otherwise. Form the walls, by cutting from *toward* the pulp, *outward*,—never by cutting from without inward, *toward* the pulp, if the dentine is much softened. Leave the deeper portion of the cavity untouched, if need be, rather than expose or uncover a pulp, for it can never be protected so nicely again, except by secondary dentine. The practice of purposely exposing pulps that are only protected by a thin portion of softened dentine, for the purpose of capping with oxychloride of zinc, as advocated by some of the teachers, I most emphatically object to. Never remove darkened dentine, simply because it *is* darkened, unless situated so that it is likely to show, after completion of the operation. I would never wish to have a grinding surface, buccal, labial, or lingual surface cavity undercut, but would prefer to have the walls parallel. Approximal grinding ones should be somewhat undercut, when considered from their approximal aspect, as more retaining power is required in such cases. Have the floor, or part to be built from, as near a plane surface as is consistent with safety, and the lateral walls rising perpendicularly from it. I do not drill retaining pits, but prefer to *hold* the first few pieces till self-sustaining.

C. F. Ives, *Recording Secretary.*

PHILADELPHIA DENTAL COLLEGE.

THE eighth annual commencement of the Philadelphia Dental College was held at the Academy of Music, Friday, February 24th, 1871, at 12 o'clock M.

The address to the graduates was by Prof. D. D. Smith, D.D.S.; valedictory by Jas. B. Wilmott, L.D.S., of Canada.

The number of matriculants for the session was seventy-three.

The degree of D.D.S. was conferred upon the following members of the graduating class by Rev. Richard Newton, D.D.:

NAME.	RESIDENCE.	THESIS.
Phil. S. Appleman	Maryland	Digestion.
Alphonzo W. Buckland	Rhode Island	Adhesive Foil.
Henry E Balis	New York	Requirements of the Dentist.
Wm. A. Barrows	New York	The Coming Dentist.
Saml. P. Chalfant	Iowa	Anæsthetics.
James M. Carter	Ohio	Requisites necessary to the success of the Dentist.
C. Curtis Cleverly	Ohio	Filling Teeth.
Hartley Clarke	Ohio	Country Practice.
Pedro F. de Castro	Colombia, S. A.	Odontalgia.
Saml. J. Dickey	Pennsylvania	Supernumerary Teeth.
Thornton F. Farmer	Pennsylvania	Impressions.
Thos. J. Harcourt	Ohio	Requirements of the Dental Graduate.
Edward S. Hathaway	Massachusetts	Treatment of Dental Caries.
Hans O. Heide	Norway	Obturators.
Chas. H. Harry	Pennsylvania	Digestion
John H. Hubert	Germany	The Fifth Pair of Nerves.
John H Hisey	Ohio	The Mouth, its Structure and Function.
George B. Hawley	New York	Circulation.
Michael S. Klinck, M.D.	South Carolina	Respiration.
T. A. Lewis	Ohio	Dental Caries.
John L. Mackey	Halifax, N. S.	Theory.
Joaquin M. Palacio, Jr.	Colombia, S. A.	Indigestion.
Casimir C. Patrick	South Carolina	Digestion.
Enos J. Perry	Pennsylvania	Artificial Dentures.
Edward S. Rider	Kentucky	Dental Caries.
Thos. J Reynolds	Kentucky	Theory.
Sergio M. Rosellon	Colombia, S. A.	Diseases of the Antrum or Maxillary Sinus.
Charles W. Sellers	Ohio	Dental Therapeutics.
Jacob Simonson	New York City	Extraction.
Robert H. Stansfeld	Canada	The Circulation.
Wm. L. Singley	Pennsylvania	Extraction.
Henry C. Thompson	Washington, D.C.	The Digestive Process.
B Hammet Teague	South Carolina	Saliva.
Gabriel G. Torre	France	Filling Teeth.
Joseph P. Wyman	Pennsylvania	Mechanical Dentistry.
James W. Willmott	Canada	Requisites of the Dentist.

HONORARY DEGREE.

(For service rendered the College as Demonstrator of Mechanical Dentistry.)

Charles J. Essig .... Pennsylvania.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The fifteenth annual commencement of the Pennsylvania College of Dental Surgery was held at the Musical Fund Hall, Philadelphia, Saturday evening, February 26th, 1871.

The valedictory address was delivered by Prof. T. L. Buckingham, D.D.S., Professor of Chemistry.

The number of matriculants for the session was seventy-four.

The degree of D.D.S. was conferred upon the following graduates :

NAME.	RESIDENCE.	THESIS.
Andres E. Brunet	Cuba	Affections of the Teeth.
J. Garcia Gonze	Porto Rico	Hysteria.
J. Edward Line	New York	Chloroform.
James Wright	Pennsylvania	Physiological Sympathy.
Thomas Linn	Pennsylvania	Important Dental Operations.
R. F Philips	Florida	Preservation of Children's Teeth.
T. W. Dobbins	New Jersey	Inflammation.
A. P. Tompkins	Pennsylvania	The Principles and Science of Dentistry.
G. R England	Pennsylvania	Salivary Calculus.
A. Pierpont Todd	New York	Teeth and their Diseases.
H. Beraz, M.D	Bavaria	Inflammatory Diseases of the Mouth.
E. Alexovits, M.D	Austria	Embryology of Teeth.
W. S Jewett	Maine	Treatment of Inflammation.
J. M. Stewart	Pennsylvania	The Treatment of Exposed Pulps.
Erastus H. Leffler	Pennsylvania	Necrosis.
Joaquin Plana, M.D	Cuba	Inflammation.
W. M. Martin	Pennsylvania	Preservation of Teeth.
Manuel Roca, M.D	Cuba	Odontalgia.
H. W. Buchanan	Pennsylvania	Filling Teeth.
R. I. Hampton	Georgia	Adhesive vs. Non-adhesive Foil.
Daniel Hopps	Florida	Exposed Pulps.
Ed. Coquard	Michigan	Extracting Teeth.
W. D. Antrim	New Jersey	Treatment and Filling of Pulp Cavities.
A. B. Abell, Jr	Pennsylvania	Artificial Appliances for the Mouth.
Pedro F. Fernandez	Cuba	Diseases of Antrum or Maxillary Sinus.
H. C. Gilchrest	New York	Temporary Teeth.
L. D. Caulk	Pennsylvania	Human Teeth.
Edward Brunet	Cuba	Stomatitis.
E. T. Hutchinson	Illinois	Inflammation of Dental Tissues and their Therapeutics.
S. Zimmermann	Canada	The Internal Maxillary Artery.
C. E. Caufman	Pennsylvania	Extraction of Teeth.
M. C. Steeves	Canada	Development of Human Teeth.
R F. Tull	Maryland	Neuralgia.
A. Lezama	Cuba	Affections of Superior Maxillary Bone.
S. Davis	Pennsylvania	The Dentist as an Instructor.
S A Keltner	Ohio	Impressions.
J. C. Barnum	New York	The Exposure of Pulp by Caries, and Treatment.
John R. Thompson	South Carolina	Inflammation.

BALTIMORE COLLEGE OF DENTAL SURGERY.

The thirty-first annual commencement of the Baltimore College of Dental Surgery was held on Thursday evening, March 2d, 1871, at 7½ o'clock.

The valedictory address was delivered by Prof. Thos. E. Bond, M.D.

Address by H. C. Jones, of Virginia, a member of the graduating class.

The degree of Doctor of Dental Surgery was conferred upon the following members of the graduating class by Prof. F. J. S. Gorgas, M.D., Dean of the Faculty.

NAME.	RESIDENCE.
Edward Wm. Anderson	Virginia.
Mintern S. Brown	D. of Columbia.
Oliver A. Dailey	D. of Columbia.
John Hiram Darrell	D. of Columbia.
Charles Wm Fisher	Texas.
William J. Fogle	Georgia.
Frank Lewis Harris	Virginia.
James Richard Harvey	Arkansas.
Thomas M. Howard	Georgia.
Exum Lewis Hunter	N. Carolina.
Robert Green Hunter	Florida.
Henry Cabell Jones	Virginia.
Robert Edward King	N. Carolina.
Thomas B. Legare	S. Carolina.
Francis H. Mannakee	Maryland.
William A. Mills	Virginia.
John Marshall Norman	Tennessee.
Ambrose S. Page	Virginia.
Thomas H Parramore	Virginia.
John Francis Poulton	Virginia.
Joseph Henry Scales	Virginia.
Samuel Isaac Scott	Maryland.
James H. Sherwood	Maryland.
Edward H. Stelle	D. of Columbia.
William L. Stewart	Texas.
Lawson B. Wilson	Maryland.
Geo. S. Yingling, M.D.	Ohio.

The *Gradus Honorarius* of Doctor of Dental Surgery was conferred upon Prof. Norman W. Kingsley, of New York, for service rendered to the science in the treatment of defects of the palate.

OHIO COLLEGE OF DENTAL SURGERY.

The annual commencement exercises of the Ohio College of Dental Surgery took place on the evening of March 1st, 1871, in the hall of the college, College Street, Cincinnati, Ohio.

The address to the class was delivered by Dr. F. H. Rehwinkle, of Chillicothe, and the reply on behalf of the class was by J. E. Crarens.

The degree of D.D.S. was conferred upon the following members of the graduating class, by Dr. James Taylor, President of the Board of Trustees:

NAME.	RESIDENCE.
J. E. Crarens	Indiana.
Charles Welch	Ohio.
J. A Stipp	"
John Rabe	"
S. E. Harriman	Indiana.
J. R. Welkings	Mississippi.
R E. Finley	Ohio.
C. S. Case	Michigan.
W. T. Wallace	Ohio.

NEW ORLEANS DENTAL COLLEGE.

The fourth annual commencement exercises of the New Orleans Dental College took place on the evening of March 7, 1871, at the rooms of the college, on Carondelet Street, New Orleans, La.

The valedictory was delivered by Prof. J. S. Harrison, A.M., M.D., of the Faculty, and the address on behalf of the students was by Mr. Herbert Norman, of South Australia.

The degree of D.D.S. was conferred upon the following members of the graduating class, by Prof. J. S. Knapp, D.D.S., Dean of the Faculty:

NAME.	RESIDENCE.	THESIS.
John D. French	Mississippi	Odontalgia.
Sidney M. Cook	Louisiana	Salivary Calculus.
Charles P. Angell	"	Neuralgia.
John A. Arrington	Tennessee	Artificial Denture of the Lower Jaw.
Herbert Norman	South Australia	Hemorrhage: Hemorrhagic Diathesis and its bearings in Relation to Dentistry.

Honorary degrees were conferred on Messrs. S. J. Cobb, of Tennessee, Rufe Waldo Thornton, of Georgia, and Joseph C. Turner, of Alabama.

MISSOURI DENTAL COLLEGE.

The fifth annual commencement of the Missouri Dental College was held, in conjunction with the commencement of the St. Louis Medical College, on March 9, 1871, at the Temple, corner Fifth and Walnut Streets, St. Louis, Mo.

The address to the dental class was delivered by Prof. J. S. B. Alleyne, M.D.

The degree of Doctor of Dental Surgery was conferred upon the members of the graduating class by Prof. Homer Judd, M D., D.D.S., Dean of the Dental Faculty.

We are not informed of the number of matriculants, nor of that of the graduating class.

DENTAL SCHOOL OF HARVARD UNIVERSITY.

The third annual commencement of the Dental School of Harvard University took place, in conjunction with the medical commencement, on Wednesday, March 8, 1871, at the hall of the Medical College, Boston.

The address was delivered by Rev. Edward Everett Hale, A.M.

The degree of D.M.D. (Dentariæ Medicinæ Doctor) was conferred by President Charles W. Eliott, LL.D., upon the following graduates:

NAME.	RESIDENCE.	THESIS.
Bailey, Charles Monroe	Machias, Me.	Inflammation.
Baker, George Hayward	Worcester, Mass.	Carbolic Acid.
Hussey, Charles Edwin	Dover, N H.	Ethers.
Jewell, Albert Benton	Exeter, N.H.	Alveolar Abscess.
Laskey, Philip Benjamin	Marblehead, Mass.	Preservation of Carious Teeth.
Morgan, William Pitt	Albion, N. Y.	Epithelioma.

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

Excision of Inferior Maxillary Nerve.

Gentlemen,—The patient now before you has been suffering for nearly three years with a most intense neuralgia of the right side of his face and jaws.

He states that he never experienced any difficulty until these three years back (some time after the close of the war, through which he had passed), but that since that time he has been living such a life of pain as to render existence almost unendurable.

As to the cause of this difficulty, I regret to say that I am unable to give you an exact explanation. In a previous lecture (*vide* Dental Cosmos, Dec. 1870) I told you that a cause for neuralgia always existed, and, that we could not discover it, did not prove its absence, but merely our ignorance; yet such ignorance is often excusable, since the cause may be beyond a general present understanding of this wide subject. I have examined this man thoroughly, and have failed to find any special recognizable factor. His upper and lower dentures are perfect, and, after the most rigid scrutiny, I am unable to detect either exposed pulp, nodules, abraded teeth, or any other of the nine or ten favoring conditions of neuro-odontalgia which I then mentioned. There is no tenderness or even peculiarity of sensation afforded by any of the teeth. Therefore, although these organs are so very frequently connected with this difficulty, yet in the present instance such does not appear to be the case; neither can he be suffering from the form of neuralgia caused by the pressure upon the nerves of the alveolar process in edentulous persons from contraction and absorption; for he has all his teeth. We, therefore, continue our investigations to other parts, and seek elsewhere an explanation by "reflex irritation." First in order, of course, would be the other branches of this same fifth nerve, and here we find, as I have already said, no difficulty with the upper teeth, neither can we find any tumor,

wound, cicatrix, or lesion upon any of the other branches which would seem to be a factor in its production. We must then go still further yet, and examine other nerves which might reflect an irritation upon this one, and prominent among such are the branches of the cervical and brachial plexuses, which in some cases would seem to possess a special and exceptional communication with the fifth, attributable only either to a congenital or acquired peculiarity of organization. It has been found in several cases that a wound of the ulnar nerve was sufficient to cause reflex neuralgia in this fifth, and if this be true, why may not other nerves reflect their irritation in a similar manner? We have passed over and thoroughly examined every organ and portion of this man's body, reviewing every observation and fact which might enlighten us, but all has been without success, so far as the discovery of any exciting cause is concerned. He lives in a malarial region, but quinia has failed to relieve him. We acknowledge the fact that we are unable to discover the special cause; yet from the expression, so to speak, of the case, I feel confident that the point of irritation (though there is no tenderness in any place) is upon the inferior maxillary branch of the fifth pair, and that this point is situated somewhere in the lower jaw, anterior to the posterior dental foramen, and in the dental canal. Granting that such is the case, then what could be more rational than to disconnect the point of irritation and the central point taking cognizance of such irritation—to sever the wire leading to the central office—and thus prevent the transmission of any disturbing condition? With faith in my impression, we will make the effort for this man's relief.

To accomplish this hoped-for good we must make a section of the nerve at some point in its course, which is, as you know, from the ganglion of Gasser, out of the oval foramen, through the spheno-maxillary fossa, into the posterior dental foramen, through the canal and out upon the face at the mental opening. Now, the point of emergence from the foramen ovale, just at the otic ganglion, would perhaps be the most effectual point; but this is deeply situated and the dangers of the operation would be very great from the close proximity of so many important structures, the most dangerous of which would be the internal maxillary and carotid arteries. This, then, being impracticable, we select some point in the dental canal where it can be easily reached by simply removing the external bony plate; and in the present instance, as we wish to be certain of operating behind the irritated portion, we will go back almost to the dental foramen.

Of course such an operation should not be attempted until every means has failed, and until we are perfectly satisfied that there is no patent reason which can be otherwise removed. This is certainly the history of this case. Again would I caution you to study well each

case, and remember that over-exertion, venereal excess, indigestion, malaria, non-aeration of the blood, grief, tobacco, noxious gases, etc. may all act as depressants of the vital economy, either by over-stimulation or by under-nutrition, and thus assist in the production of a continued neuralgia.

Again, moreover, all medical means should be thoroughly tried to assist in the removal of any lesion which may be discovered as the exciting cause; yet, should such lesion be unrecognizable, we can only treat upon general principles, acknowledging our weakness.

"What, then, are the medical means?" you may ask, and in reply I can only recommend a few of the scores of drugs which have been lauded for neuralgia.

The general condition of the health should first receive our attention, since we shall often find neuralgia coexisting with anæmia, a condition which is in fact the direct cause of these pains. In these, and in nearly all neuralgic cases, much benefit will be derived from the exhibition of tinct. ferri chlor. gtt. xv ad xx, t. d., either alone, or better, in combination with quin. sulph. gr. ij. A solid preparation of iron may be used with the same combination in pill form, with strychniæ sulph. gr. $\frac{1}{40}$, advantageously added to it. By thus building and strengthening the constitution, the exciting cause, debility, may be removed and cessation of pain be the result.

The anti-neuralgic remedies which have for their object the soothing and quieting of the pain either by being addressed to the system at large, or to the local affected part, are almost innumerable, and every practitioner has his favorite.

A combination of quinine, conium, and aconite is a most excellent anti-neuralgic, as is also potass. brom. in twenty-grain doses, four times a day, or zinc. valerianat. in doses of half to one grain t. d.

A continued course of arsenic, or of liq. hydrarg. arsen. et iodid., will often be of benefit. During the paroxysms, morphia and ether are our chief reliance, together with hot mustard-plasters, or hot sand or salt bags, to the affected parts. A broken application of ether directly to the painful region, by means of a sponge, will often change the condition of the nerve-current, and pain will cease. The hypodermic injection of atropia $\frac{1}{60}$ to $\frac{1}{30}$ gr., persistently continued for several weeks, is often of most marked advantage; and the same may be said of morphia, though the latter is not so properly curative in its action, being rather alleviative. Creasote makes a good local obtunder, in the strength of gr. v to ℥i of lard. Aconitia and veratria are also used locally in the form of ointments.

The two articles which probably give the greatest relief are morphia and atropia, used hypodermically. Should all means fail, however, and our minds become satisfied that an otherwise irremediable condition in

the nerve substance exists at a point external to the proposed line of section, we are justified in performing such an operation, even though it must be confessed that the results of such interference are not always as satisfactory as might be desired.

In order to reach this nerve in the canal, we are obliged to cut down through the soft parts, and in doing this we must carefully avoid all important structures. Let us look at the anatomy. There is the facial artery, crossing the border of the jaw just at the anterior edge of the masseter muscle, and running toward the angle of the mouth. It must not be cut, and I will fix its position by an expedient which ought always to be practiced by young surgeons,—*i.e.* mapping out the lines with ink; above is the duct of Steno, extending from the lobe of the ear to second molar tooth of the upper jaw, and we will also mark its course. Again, upon the outside, I mark the edge of the parotid gland, a structure which we must not injure, if possible, since salivary fistule is apt to follow. Here, then, are these lines,—boundaries of a triangle,—and having them constantly before us, we can cut without fear so long as our knife does not reach them.

In the present instance, wishing to make the section far back, we shall be obliged to cut through a portion of the masseter muscle itself; still, this will not give us any uncontrollable hemorrhage. The incision, which must extend down to the bone, will be somewhat semicircular, in order to turn back the flap without difficulty; and when the periosteum is divided, a trephine will be applied, in order to remove the bony plate, when the cavity can be quickly exposed, with the nerve uninjured, if care has been used; and separating the nerve from the vein and artery, a half inch or more will be removed, after which the flaps are only loosely laid in position, that healing may be facilitated, while drainage is also secured. In regard to separating the nerve from its accompaniments, we will make the attempt, but failing, will simply cut everything in the canal and control the hemorrhage by a plug, if necessary.

[Operation then performed as described, and a portion of the nerve removed without difficulty. The hemorrhage from the inferior dental artery was easily controlled by a simple plug of lint. The man had no pain for twenty-four hours, but it then returned; the paroxysms being quite frequent and severe for nearly two days, though not so acute in character as before the operation, he being able to remain comfortable by the use of forty minims of Magendie's solution, hypodermically, per diem, while formerly he was obliged to employ eighty.

This continuance was not, however, looked upon as foreshadowing the failure of the operation, since it could not be expected that a nerve so long irritated, and in such an excited condition, would regain a state of tranquillity at once, any more than would a troubled sea for days

after the storm has ceased. Of course this delay was extremely discouraging to the patient, but at the end of two weeks the attacks slowly diminished in frequency and force until the twinges were scarcely perceptible, and at the present time, seven weeks from the performance of the operation, he writes that he is "entirely free from all pain, and can use his jaws without any discomfort."

The case will be kept under notice, and the ultimate result recorded. —De F. W.]

In regard, gentlemen, to the real and permanent benefit to be derived from this operation, I can only refer you to the literature upon the subject, and from this I feel assured that it is well worth a trial in these persistent cases, since many recoveries have undoubtedly occurred, as must always be the case where the lesion is external to the section made.

This inferior dental nerve is the one most easily reached, but the superior maxillary has also been the seat of a similar operation.

In the *Cincinnati Lancet and Observer*, August, 1869, a case is recorded by Dr. Murray, in which the inferior was divided in the canal, and the superior as far back as the foramen rotundum, behind the ganglion of Meckel.

There are several of these excision cases reported by Gross in the *American Journal of the Medical Sciences*, January, 1868; also one by Blackman, in July, 1869, in which latter case not only was the inferior nerve removed from the entire extent of the canal, but the superior also as far back as the foramen rotundum behind the ganglion of Meckel. This case was successful for sixteen months at least, up to the time of the report, which must have been a godsend to one who had endured untold agonies for eleven years; and I trust that a similarly happy result will occur in the patient who has just been carried from this room, since a continuance of his present condition would seem almost an impossibility, and his mind has certainly already suffered by the extreme severity of the paroxysms, which have scarcely left him five minutes of continuous rest during the twenty-four hours.

I trust that we shall not be obliged in this case to excise the superior maxillary nerve, for that becomes a much more serious operation. Still, it has been successfully done in a number of instances, and, when necessary, is best accomplished by the operation of Carnochan, which consists in trephining the anterior wall of the antrum, breaking up the osseous walls of the infra-orbital canal, piercing and breaking through the posterior antral wall, and cutting off the nerve just as it has emerged from the round foramen. In this operation he insists that this spheno-palatine ganglion shall be removed, since, being composed of gray or vesicular matter, it is a generator of nerve-power. His operation is certainly far more simple and safe than one of Linhart, recorded in the *Viertel-Jahrsschrift für die practische Heilkunde*, t. ii., 1860, in

which Middledorpff's powerful galvano-caustic apparatus was employed. He reports that, as the cauterizing current passed backward, it instantaneously destroyed every structure to the spheno-maxillary fossa, and an immediate gush of blood, from the injured internal maxillary artery, filled the orbit and all the surrounding tissues. The carotid was not tied, but, hemostatic pledgets failing to arrest the hemorrhage, the actual cautery was at last applied, which is a complication no surgeon would court.

There is another case reported by Nussbaum, of Munich, in Gurer's *Progress of Surgery* (1863–65), Berlin, which will certainly carry off the palm, if such it be, for "heroic" treatment. This woman submitted to various sections of the supra- and infra-orbital nerves, for a period of five years, "but finding no relief," the report continues, "repeated extirpations of the cicatrices were made, the common carotid tied, the ascending ramus of the lower jaw trephined, and the inferior dental nerve exsected together with the mylo-hyoid and lingualis, causing necrosis of the bone, which had to be removed to the articulation. Five months later the neuralgia returned, when the infra-orbital nerve was exsected nearly to the foramen rotundum. This was followed by an osteo-plastic resection of the upper part of the superior maxillary bone, but saving the alveolar process, as in Langenbeck's operation. The bones were then replaced, and united by first intention. The pain had entirely ceased up to the time of publication, several months after the operation."

These cases are certainly formidable, but our own American reports are perhaps the most favorable ones published, and certainly lead us to hope for many gratifying results, especially when we read other opinions as referred to in the above reports from *Brun's Surgery* (Tubingen, 1859), under "Kau- und Geschmachs Organs," and p. 838, erst band.

Carmichael calls attention to the fact that the nerves are often enlarged and thickened in these cases of inveterate neuralgia, and a case is recorded in my work upon *Oral Surgery* (p. 442) where the superior dental nerves were of the size of knitting-needles, and were removed from the antrum. In conclusion, then, gentlemen, let me sum up by saying that, although, as remarked by Dr. Anstie, the subject is an "uninviting one," yet that it is an operation eminently proper when all other means have failed, and that it promises a reasonable hope of success.

EDITORIAL.

SOUTHERN DENTAL ASSOCIATION.

We would call attention to the fact that the third annual meeting of the Southern Dental Association will be held in Charleston, S. C., on the second Wednesday in April next; and we trust there will be a large attendance of members of the profession. J. H. McQ.

WASHING AMALGAM.

To remove the black oxide of mercury from the amalgam preparatory to filling a tooth, it is the general custom to wash it in alcohol, either alone, or combined with chloride of sodium, or some other salt. I have found, however, in the limited use I make of this article in filling teeth, that clear water serves as good a purpose as the more expensive alcohol in removing the oxide. The amalgam is mixed in a small wedgewood mortar, and subjected to repeated washings until every evidence of the oxide has disappeared. J. H. McQ.

NECROSIS OF INCISORS FROM BITING THREADS.

The practice so commonly indulged in on the part of ladies in biting off thread with their front teeth, is not unfrequently followed by most unfortunate results. The jar attendant upon the sudden occlusion of the cutting edges of the upper and lower teeth, when the thread is severed, exerts a most disastrous influence, either by fracturing the enamel, destroying the vitality of the pulp, by compressing the vessels entering the foramen at the apex of the tooth, or exciting periosteal irritation from the same cause. The discolored and necrosed tooth, alveolar abscess, etc. is a train of sequence naturally flowing from this apparently slight cause. The beauty of many a fine set of teeth has in this way been marred by the presence of a blackened tooth, and the possessor not only subjected to mortification on that account, but, in addition, intense suffering from repeated attacks of periodontitis.

As a case in point: Mrs. Z., a lady aged twenty-four, as she informs me, had some two years since a severe attack of periodontitis in the left inferior central incisor, which caused her intense suffering some two weeks or more. The lengthened period which she was subjected to the pain was due to the fact that she sought a physician rather than a dentist for relief, under the impression that it was neuralgia, as there was no evidence of decay in the tooth other than being discolored. About a month ago she came under my care, suffering from a similar attack. With the view of relieving her, I drilled into the pulp cavity at the neck of the tooth, removed the remains of the dead pulp, and made several applications of iodine and aconite to the gum; little or no relief, however, was afforded by these applications, while the pain she suffered was of an excruciating character, and anticipating a lengthened period of suffering similar to that which she had gone through before, she insisted upon the removal of the tooth.

Although opposed at first to this, I eventually yielded to her solicitations, and extracted it. I should not have consented to this, had not the front teeth been very much crowded and irregular. I was satisfied

that the space would soon be lessened by the approximation of the left lateral and right central incisors, by properly directed efforts to correct the irregularity. On examining the tooth, I found the root necrosed, and thus it had been acting (and if it had remained would have continued) as a foreign body, proving a constant source of irritation to the surrounding soft parts.

I was informed by the patient that she was in the habit of biting off thread, and this was the exciting cause of trouble.

After the removal of the tooth, a rubber ring was thrown around the central and lateral incisors, with the view of drawing them together, and a silver bar adjusted to the teeth, with rubber rings passing from it to the irregular teeth. Everything is progressing favorably, and in a short time the space will be entirely closed. J. H. McQ.

OBITUARY.

Died, at Montevideo, South America, on October 16th, 1870, Dr. Peter Bourse, dentist, a native of the United States, aged forty-eight years. A well-known dentist and philanthropist in that country.

Died, in the city of New York, on October 30, 1870, of Bright's disease, Peter A. Preterre, M.D., D.D.S. Dr. Preterre was a graduate of the Pennsylvania College of Dental Surgery, and had practiced dentistry since the year 1847.

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The Physiological Action of Nitrous Oxide Gas, as shown by Experiments on Man and the Lower Animals. By J. J. Colton. Philadelphia: S. S. White.

Physiological Action of Nitrous Oxide Gas, as shown by Experiments on Man and the Lower Animals. By R. Amory, M.D. Boston: James Campbell, 1870.

Both of the two brochures whose very similar titles head this review, claim to be founded upon exact experimentation, and yet in their conclusions they are singularly diverse. Mr. Colton puts forward the theory that nitrous oxide produces anæsthesia by intensifying oxidation in the nerve centres; whilst, according to Dr. Amory, the cause of the anæsthesia is diminished instead of increased oxidation, combined with a stasis of blood in the capillary vessels. It is very certain that both cannot be right, and very possible that neither is. The theory of Mr. Colton certainly appears improbable. It is well known that functional activity is in a measure proportionate to cell changes, and if tissue changes are increased by the gas, there ought to be marked

stimulation of function of the brain,—a stimulation, too, which should be pure and simple. It may be said that there is such stimulation when the gas is taken sufficiently diluted, and that the anæsthesia caused by the pure gas is simply the result of paralysis from overstimulation. This may be so, but is certainly not proven. The intense rapidity with which the action of the gas commences and ceases hardly favors it. There is, however, a much stronger *a priori* reason for hesitating to accept Mr. Colton's theory.

The inhalation of pure oxygen does not produce any symptoms whatever of anæsthesia; and even accepting the supposition of Mr. C., that nitrous oxide liberates nascent ozonic oxygen in the tissues, and that the gas acts with immensely increased activity in such state,—even accepting this mass of suppositions,—the means hardly seem adequate to the result. Such counter-arguments as these are, however, merely incitants to a close scrutiny of an asserted experimental proof; they do not by any means disprove Mr. Colton's theory.

The only shadow of proof offered by Mr. Colton is the result of analyses of samples of air, some of which had been breathed out during anæsthesia; others during the normal state. These analyses were, however, too few in number to be of any value whatever, and are, besides, somewhat discordant; and, according to an admission of Mr. Colton himself, were wanting in rigid accuracy of performance. Moreover, were they infinitely numerous and in absolute concord, they would not at all prove the point at issue, for the per cent. of carbonic acid in the air expired is not shown to be a measure of quantity. It is at least conceivable that much more air may enter and pass out of the lungs during ordinary breathing, than during that of anæsthesia. We must then add to the indictment of Mr. Colton's theory as not probable the verdict of "not proven."

The memoir of Dr. Amory is, we conceive, much the more valuable of the two. For reasons, hereafter to be assigned, we do not think his theory is fully substantiated, although he does render it extremely probable that there is not only arrest of oxidation, but also cerebral capillary stasis, during anæsthesia from nitrous oxide. The experiments directed to the former point were seventeen in number, and consisted in measuring the amount of carbonic acid gas given off during anæsthesia and the normal condition, by means of caustic soda and potassa, chloride of calcium being used to dry the air. They were apparently made with the utmost care, and show very determinedly that during anæsthesia the amount of carbonic acid eliminated was two-thirds that during consciousness, before the inhalation; while immediately after the inhalation, and during consciousness, the carbonic acid eliminated was one-third only of that during the anæsthesia. Having established the above facts, Dr. Amory then performed several experiments modeled after those of Dr. Hammond, of New York, on sleep, to

determine in what condition the cerebral circulation is during the inhalation of the gas. These experiments resulted in showing that there was a very marked stagnation of blood in the brain during the period of anæsthesia. Having established, then, the facts of diminished oxidation, and the existence of capillary stasis during the period of unconsciousness, Dr. Amory propounds his theory,—that cerebral capillary stasis due to arrest of oxidation in the nerve centres is the cause of the anæsthesia. Allowing entirely his facts, we do not think that his deductions are at all necessary ones. They contain the same grave elements of doubt that are so prominent in the conclusions of Dr. Hammond in regard to sleep.

Anæsthesia and sleep both mean cessation of cerebral functional activity, and cessation of function means lessening of capillary circulation. There must, then, of very necessity, be a partial capillary stasis in the brain during such periods, and proving its existence is not proving that it is the *cause* of the unconsciousness. The fact that a patient can be kept so long under nitrous oxide gas, and recover so quickly, makes the existence of a complete capillary stasis very improbable. The arrest of circulation must be only partial: and the same is true of oxidation. The period during which life can be prolonged when the access of oxygen to the blood is denied, is at most not more than five minutes, and yet anæsthesia from nitrous oxide can be prolonged almost for hours. The arrest of tissue changes must be then very partial, and can conceivably be accounted for on the supposition just made, *i.e.* checking of function.

We have been recently engaged in an elaborate study of the physiological action of the nitrite of amyl, and have proved, to our own satisfaction at least, that it has a most wonderful power of arresting oxidation. The line of the argument is as follows:

1st. Out of the body a little vapor of phosphorus, diffused in the air of a jar, completely prevents oxidation of phosphorus. The latter may be heated almost to the melting point, and be glowing like a live coal, when a few drops of the volatile liquor, shaken in the jar, will instantly extinguish it.

2d. Nitrite of amyl, both in and out of the body, prevents the change of color from venous to arterial blood.

3d. It reduces most extraordinarily animal temperature.

4th. If the spine of an animal be cut high up, and the creature then be placed in a hot room, there is shortly an enormous rise of temperature in the body, accompanied by ante-mortem putrefaction, and after death, extremely rapid decomposition, with a considerable persistence of the high temperature,* all simply dependent upon decrease in tissue

* The proofs of this assertion will be detailed in full in a forthcoming memoir on Nitrite of Amyl.

vitality, and consequent assertion of ordinary chemical laws. Nitrite of amyl prevents both the rise in temperature and chemical changes during life, as well as the subsequent extraordinarily rapid decomposition.

5th. Nitrite of amyl reduces the functional activity of all the tissues, without acting as an instant complete poison to any, unless it be the motor nerve centres.

6th. Nitrite of amyl reduces very markedly the elimination of carbonic acid.

This is not the place to expand the argument which the above—experimentally proven—facts suggest. The only conclusions to be drawn do seem, however, that nitrite of amyl arrests oxidation of tissues. Nitrite of amyl is in no sense an anæsthetic. The motor ganglia are paralyzed long before the centres of consciousness and sensation. This apparently gives good reason for doubting that nitrous oxide acts on the brain in the way that Dr. Amory believes it does. That there is a checking of the circulation and of oxidation in the brain tissue we freely admit; that this is the cause of the anæsthesia is certainly not proven, and does not appear to us at present probable. There certainly is no necessity for such theory. Alcohol, opium, belladonna, chloroform, and a host of other substances produce anæsthesia; and can it be supposed that they do it by arresting oxidation of tissue? Must we call in the same factor to account for the paralyzing influence of woorara, veratria, viridia, and other motor poisons? Certainly not. There can be no doubt that many substances have relations, affinities with, or power over certain living cells by which they act upon them directly; increasing, diminishing, or altering their vital actions. Of course, this is mysterious, but no more so than any of the ultimate actions of nature. There is an end to human knowledge; and it is very possible that we will never know why or how poisons affect living cells, any more than we shall know the absolute nature of vital force, or why it is that one cell secretes urine, and another ideas. The only theory in regard to anæsthesia, then, we think that can at present be received, is that chloroform, ether, nitrous oxide, and various other vapors have some relation with the cells whose function is secretion, or, if this term be objectionable to some, the result of whose functional activity is consciousness and thought, by virtue of which relations they modify and at last arrest the functional activity of such cells.

Whilst, however, we do not agree with Dr. Amory in his conclusions, we would give him high praise for the careful, conscientious, thoughtful manner in which his investigations have been conducted, and wish for him long life and the fullest opportunities in his studies in physiological therapeutics. H. C. Wood, Jr.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Congenital Atrophy of the Temporary Teeth, with Deformity of the Inferior Maxilla.* Case treated by Perine & Franklin, Dentists, New York.—The patient, a miss nine years of age, of nervo-sanguineous temperament and scrofulous diathesis, applied to us for advice, Nov. 1869.

"The appearance of the face and condition of the teeth were as follows: the superior central incisors and the six-year molars were the only permanent teeth in the superior jaw; these, with the temporary molars, three in number, were badly atrophied; the incisors presenting a series of circular perforations, with their cutting edges deeply notched or serrated. These teeth were filled with gold, the fillings extending nearly over their labial and lingual surfaces; the six-year molars were too imperfectly organized and broken down to justify an attempt at their preservation. The inferior permanent incisors presented the same atrophied or disfigured condition; the other teeth in the lower jaw were either badly broken away or entirely wanting. The only teeth in the mouth articulating were the six-year molars, and notwithstanding that these teeth were imperfectly formed, and but little more than half the ordinary length, yet when together the front teeth were kept apart $\frac{5}{16}$ of an inch. The mouth being thus constantly open, articulation was indistinct, the chin pointed, giving an elongated look to the face, and altogether a painful, if not repulsive, expression. We have never seen a case before where every tooth in the mouth, both temporary and permanent, were so seriously affected. And it is difficult, indeed, to divine the cause or causes which operated to produce such results—the child from birth having enjoyed a tolerable degree of health. She had the measles, but the disease was not characterized by any unusual severity. Her principal food while young was milk from the bottle. Whether our city milk, or the elastic rubber nipple, either or both, are in any manner chargeable with contributing to these results, we do not pretend to say. That many diseases to which children are liable during the first years of existence are capable of causing great constitutional disturbances, and abnormal conditions of the secretions of the body, is well known. According to our best dental authority, among the diseases to which most children are liable, and which often result in injury to the deciduous teeth, are mentioned measles, chickenpox, smallpox, scarlet fever, and some other maladies of a milder type, and by inference less liable to injure the dental organs. Various theories have been advanced by different authors as to how these several diseases can act so destructively to the temporary teeth, and upon the rudiments of the permanent teeth, before their eruption through the gums. As we are unacquainted with any agents except acids that are capable of acting upon the enamel or dentine, we are inclined to adopt the theory that some time during the continuance of diseased action the secretions of the body change from a normal alkaline, or neutral condition, to an acidulated one, with sufficient solvent powers to either decompose the lime-salts before calcific action takes place, causing arrestation of the formative

function, or by attacking the newly-formed tooth and dissolving the lime-salts from it; or both of these actions may be going on at the same time. The appearance of many teeth indicates that during their formation serious interference in the deposit of enamel had taken place. Teeth sometimes present deep pits or grooves across the surface of several in a more advanced state of development, while those less progressed find immunity from the corroding agent. Among the diseases to which adults are liable, and which are believed to cause caries of the teeth, are mentioned diabetes, gout, rheumatism, ague, aphthæ, scrofula, smallpox, protracted indigestion, fevers, measles, miliary fevers, maniacal cases, pregnancy, venereal diseases, and many skin diseases, rickets, catarrh, mumps, quinsy, cancers, worms, and tedious dentition; and in other general and local disorders, particularly in gastro-enteritis.

"During the continuance of these diseases, the salivary secretions are more or less charged with lactic, acetic, muriatic, and oxalic acids. The acidity at times becomes so excessive and so intensely active as to dissolve the teeth in a few weeks; many persons having discovered, on recovering from a sickness of short duration, that their teeth had suffered more permanent injury during their illness than had the general constitution, and have lived to mourn the loss of important organs, which they expressed themselves as believing could have been saved by the timely administration of proper remedies. Many females, during pregnancy and childbirth, have lost teeth, which before these conditions existed were free from defects, and the duration of teeth in the mouths of many child-bearing women may be accurately determined by the number of their offspring. That this destruction of organs which exercise so important functions in the economy of life, is the natural result of conditions necessary to the perpetuity of a race we do not believe, neither are we inclined to regard the attending physician as being wholly responsible for these consequences. The artificial state of society; the unnatural mode of living; the excessive indulgence in stimulating food and drinks; want of proper exercise and rest; improper ventilation; want of cleanliness of body and mind; are among the causes that operate to produce a condition of body which under such circumstances gives but feeble play to the life forces, and when any recognized diseased action is discovered and the physician called, he has to exercise powers little less than creative, to save the constitution.

"The method adopted to change the form of the inferior jaw was as follows: we first obtained an accurate impression of the external parts of the chin, from which a cap or chin pad in hardened rubber was fashioned, this pad completely embracing the chin, and extending upward anteriorly to the lower border of the *orbicularis oris.* To this cap were fastened four silver buttons. We constructed a bandage or head-gear of webbing, fitted to the head, and adjustable by means of buckles. To the sides of this head-gear were attached four elastic straps, extending to and secured to the buttons on the chin piece. When the fixture was adjusted, a constant force was exerted upward. This apparatus was simple in construction and efficient in action, requiring but little attention except that which the mother and child could render. This appliance was worn every night and a portion of each day for eleven months, at which time the under jaw had changed its form sufficiently to allow the under front teeth to take their proper position inside the upper circle. The principal change in the form of the lower jaw was effected at the mental foramen. The improvement in the expression of the child's

face was far greater than her friends had anticipated, and proved that any facial deviation, however small, from a normal type, renders the expression painful or repulsive. The only inconvenience or annoyance the child experienced was at first an irritating and slight pricking sensation under the chin piece. This was corrected by perforating the rubber pad and covering it with chamois-skin. The child will continue to wear the fixture at intervals for some months, or until the jaw becomes fixed in its new position.

"If parents and others having the care of the young had regard for their permanent welfare, most of the deformity and disease that now everywhere abounds could be either greatly modified or entirely corrected or prevented. They do not relieve themselves of accountability when calling the aid of the physician or dentist to relieve the suffering, which has resulted in a large majority of cases from ignorance or gross neglect. Neither is it just to attribute the loss of teeth to the 'doctor's medicine.' We know that it is common to hear very intelligent people say that their teeth were good till they took medicine which destroyed them. We doubt very much whether any medicine can have any marked injurious effect upon the teeth; possibly acid remedies may exert a slight action, but it must be slight indeed; most remedies are corrective, and by inference ought to benefit rather than injure the teeth. A little care, however, in the administration of acid medicines, would relieve the physician of much unmerited blame. Those medicines that can possibly exert any direct deleterious action upon the teeth when brought in contact with them should be administered through a tube, and the mouth immediately rinsed with a little carbonate of soda and water. The facts probably are that incipient caries existed long before the person considered himself sick enough to require the aid of a doctor; then, if a protracted illness follows, the causes which rendered it necessary to call a physician continue to act with constantly increasing vigor; the result is that the teeth suffer irreparable injury, and the medicine that checked the constitutional diseased action and saved life, gets the credit of destroying the teeth."—(*Medical Gazette.*)

Salivation in Diabetes.—The reporter of the *Med. Times and Gaz.* states: "Dr. Ogle showed us four cases of diabetes mellitus in one ward, St. George's Hospital, two being under his own care and two under that of his colleagues. Of his own cases, one was dying with very severe lung symptoms. In the other case, the gums have all the appearance as if salivation had been induced by mercury. Dr. Ogle has understood from Mr. Haward, of Halesworth, under whom the patient had been, that this symptom of salivation had come on with the disease, and remained throughout, no mercury having been given. In one of his diabetic patients, Dr. Ogle showed us the uvula diverted to one side, and decided inequality in the anterior arches of the palate. In another diabetic case, he found the same appearances, only the deflection was to the opposite side. He noticed the fact of this deflection of the uvula being observed in two out of the four diabetic patients, alluding to the observations by Dr. Saunders, of Edinburgh, upon vertical hemiplegia of the palate in facial paralysis and in diabetes. He looked upon the fact of two out of four cases of diabetes casually associated presenting divergence of the uvula and inequality in the two palatal arches as something more than accidental."

"*Tooth-pain without Caries.*—We all have met with cases of great pain in apparently sound teeth. Mr. White, at the recent annual meeting of the Odontological Society, made an important contribution to an understanding of such cases. A boy eight years old was brought to him on account of continued pain in a lower temporary canine tooth. The tooth being quite sound and firm, he advised that the gum be well rubbed with spirits of camphor as a counter-irritant, and that the boy be brought back in a week. But before this time had elapsed the boy was brought back with a request that the tooth might be at once extracted, with a view to the relief of the incessant pain. This was done, and the cause of the pain was looked for in the pulp cavity of the tooth by Mr. White, who at a former time had found intolerable pain caused in a young lady of seventeen, in whom all the teeth on the affected side were apparently sound. She referred the pain to an inferior front bicuspid. This was eventually extracted, at the earnest solicitation of the patient, and on being opened the cause of pain was manifested in a globular mass of osseous deposit in the upper part of the pulp. It consisted of nodular dentine pressing the sensitive pulp against the walls of the cavity. In the case of the little boy, Mr. White's scientific curiosity was rewarded by finding in the pulp an osseous deposit unlike either secondary or nodular dentine. It was more like very coarse cementum; but on closer examination it was found more nearly allied to osseous tissue existing in the cancelli of bone. It filled very nearly the whole of the pulp cavity at the junction of its middle and lower thirds, and was pressing the fasciculi of nerve-fibres out of their course. There can be no doubt that this was the cause of the pain. Two months had elapsed, and Mr. White had heard nothing more of his little patient."—(*Lancet.*)

Irritation and Inflammation.—Dr. Hiram Corson gives (*Med. and Surg. Reporter*) the following instructive illustration of the interdependence of these, with the primary treatment: "Two men come to me to have their aching teeth extracted. I say to them I do not pull teeth; but if they ache, I can cure them for you! They do ache violently. One agrees to have it cured, and is given half a grain sulph. morphine.* The other will not take anything. In the morning they return: the one who took the morphine is well, and on looking at his mouth everything is found in a natural condition. The other man complains greatly, and on looking into *his* mouth I find that, although the evening before he had neither swelling nor soreness of the gum, it is now red, inflamed, and so swelled that it almost covers the top of the tooth, and he can not even bear to have it touched. And now let me explain this matter. The man who took the morphine had had the pain only a few hours. It was only a neuralgia,—an affection of the nerve in the bony case of the tooth, and had not yet so disturbed or affected the brain as to have an increased quantity of blood sent to it, and as the morphine placed the brain in such a condition that *it could not recognize the irritation*, of course the point of irritation existed no longer, and no blood was invited to it, and no inflammation took place. In the other case the pain was allowed to go on until it disturbed the brain, until it became a focus to which the blood, in obedience to a law of the system, rushed and crowded until all the little vessels and capillaries of

* This is larger than the usual dose, which is from an $\frac{1}{8}$ to the $\frac{1}{4}$ of a grain.—Z.

the gum were filled, and a real inflammation was developed with its accompanying febrile action."

Lancing the Gums in Difficult Dentition.—S. B. relates the following of interest upon this subject in the *Med. Investigator:* "It is but a short time since I sat at the feet of learned professors in a medical college.

"One of our professors, I well remember (and he was my ideal of a lecturer), in expatiating on the effectiveness of the homœopathic remedy in almost every condition of human suffering, took occasion to denounce the practice of lancing gums in difficult dentition. He said considerable on the subject, the sum of which was, that in true homœopathic practice, lancing was *never* called for.

"Now it so happened that I grew up on the farm, and, as the lecture went on, I bethought myself that I knew something about the young of animals, if I did not of babies. So, at the risk of a little chuckle at my own expense, I made bold to remark, that, in tending my father's flocks, I had, I thought, saved many a lamb by timely cutting its gums. I had often found them prostrate on the ground, frothing at the mouth, moaning and refusing all nourishment. A little examination would show a thin, tough glistening membrane, drawn tightly across the incisor teeth; cutting this seemed to give almost instantaneous relief. The lamb would at once take to its mother, and soon be as lively as its fellows. I remarked, further, that it was well known among farmers that young colts often died for want of a little assistance in hastening the eruption of backward teeth.

"Well, I drew upon myself what I expected—a little laugh, and many a look which said, You had better have kept still.

"But, to continue: Now that I am having a little practice in caring for babies, I must give you a bit of experience in that line.

"A few nights since I was called, in great haste, to see a child that had just had a fit. I found the child was having spasms. I administered the homœopathic dose according to the symptoms as they appeared to me, and, I thought, with some success. The patient had no more spasms for a number of hours. But the paroxysms returned. I applied myself diligently, seeking counsel from Guernsey, Raue, Lippe, and others, that, if *possible*, I might get the remedy that was *exactly* homœopathic to the condition. But the spasms kept coming more and more frequent, and harder, and it did seem as if the child must die. The parents gave it up. But finally, as it came out of a terrible spasm, and just as it was going into another, I went for the little tooth, which was pressing hard against a glistening tough membrane. The operation was soon done, *and the little sufferer was just as soon relieved.* It went right to sleep, and slept sweetly for half an hour, and it has not had another spasm yet.

"Now, of course, I can but blame myself for not using the lancet sooner. But how much of blame rightly belongs to that professor for the influence his lecture had on me, I leave for others to judge. Hereafter I shall profit from my early surgical experience with the lambs, and *especially* from this recent case in the baby. I shall, however, make a distinction between retarded dentition and difficult dentition; that is, if I find the teeth of sufficient length to protrude above the gums, and yet pressing hard against an unruptured covering, I shall do a little cutting as well as a little dosing."

Neuralgia Faciei, or Tic Douloureux. Clinic of Dr. Powell, Cook Co. Hospital. Reported by Curtis T. Fenn, M.D. (*Chicago Med. Jour.*).—"There were two forms of the disease. 1. Non-convulsive. 2. Epileptiform. The first having no twitching; the second characterized by spasmodic movements of the muscles during the paroxysm of pain. Both forms always affected the terminal branches of the fifth pair of nerves only. The second branch, or submaxillary, was most frequently the seat of disease. He had first seen this case in 1867. It began in 1865. On entering the office, the man would sit down quietly, perhaps, then jump and grasp his head, and run around the room, apparently in great agony. The paroxysm would cease in a moment, when he would sit down again, and await its return sooner or later. If he talked or got cold, the fits became worse. They were aggravated by cold or damp weather. This was epileptiform neuralgia. The atrocious neuralgias, as Gross called them, were always epileptic. There is a disease called the tic, akin to St. Vitus' dance, in which the convulsion is in some of the terminal branches of the fifth, but without pain. In this case, the pain started from the region of the right mental foramen, and ran forward. All that was done then, was to divide the nerve at the mental foramen, and to tear out or exsect one inch of it. The pain ceased instantly, and stayed away for six months. This patient had previously received an incision from the temporal muscle to the lower part of the face, but it had done no good, for it had not touched the nerve. At the end of six months, he came back as he (Dr. P.) was going East. Probably, at that time, the jaw should have been trepanned, and the nerve still further removed. A little dental instrument should have been passed into the canal, and the nerve twisted out. But in the winter of 1867–8, a section of his jaw was removed. One year later this patient again returned. He went to the hospital and was operated on. The bone was found to be too friable for another resection, so the back portion of his jaw had to be disarticulated, and removed entire. Thereafter he remained free from pain one year and a half. But it has returned. Three weeks ago the pain came back severely, characterized by the former symptoms. He cannot describe it. (The patient being called on, stated he suffered so intensely at times, that his mouth became filled with blood without his being able to discover where it came from. At this point, a paroxysm occurred, apparently induced by mental excitement.) Only two things gave any prospect of relief: 1. Opium. 2. Division of the nerve. Trousseau, after a practice of over thirty years, said that he had never seen a case radically cured. But he was a physician. Perhaps the surgeon, by repeated exsection of the nerve, may effect a cure. It was the worst disease in existence. We should reflect on this case. The pain now had its seat in a fibrous band, taking the place of bone which was exsected, and in the end of the remaining jaw. The points to be remembered were, how to locate the disease, and to make a diagnosis. Then we should not be able to promise a great deal."*

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* Having unfortunately had some sad personal experience in this direction, we relieved the distressing pain and resolved the swelling of the nerve and jaw by medicinal in contradistinction to surgical treatment. In the month of March, one year ago, we were called to go about forty miles into the country to consult with two of our esteemed suburban physicians in the case of an eminent Catholic priest dangerously ill with pneumonic consumption. While the weather was damp and raw, the cars were unduly heated and badly ventilated, the dryness

Chloral Hydrate in Neuralgia. By F. M. O'Daniel, M.D. (*Med. and Surg. Reporter.*)—"December 9, 1870, Mr. S., aged about 33, came into my office, complaining of neuralgia in the right side of head and face. He said the pain had been incessant for about three days and nights, so that he could not sleep. I asked why he did not take morphia, to which he replied that he could not on account of the alarming depression, with colic, nausea, and vomiting, which it produced. He had taken about grs. xxx quinine and a half pint whisky, the last three or four hours, without any relief, and wished me to give something to make him sleep.

"I immediately gave him hydrate chloral grs. xx, and he sat down by the fire for half an hour without relief. I then gave him grs. xx more of the chloral, and instructed him to lie down and be *perfectly still* for a few minutes; which he did, and in twenty minutes was sleeping soundly, and breathing stertorously, as if under the influence of chloroform, with pulse 75 or 80, and full. After he had slept two and a half hours his pulse had sunk to 58 or 60, and was quite soft. At the end of five hours he awoke free from pain, though somewhat prostrated, and so far as known has had no return of the neuralgia.

"In this case and several others of like character, and one of delirium tremens, the chloral has acted almost like a charm. I consider it one of our best hypnotics, and most applicable where morphia is inadmissible."

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Chloral Hydrate, Test of Purity.—The *Boston Journal of Chemistry* says: "We called attention to the various 'syrups,' 'solutions,' and 'elixirs' of chloral, some months since, and stated that hydrate of chloral underwent spontaneous change from being kept in any liquid form, and consequently all these mixtures were inert or injurious. The *pure crystals* are the only form in which it should be kept, and from these physicians can make their own combinations for the use of their patients. Large quantities of the crystals are sold which are *very impure*, and in response to Dr. Chesney's suggestion, we would state that when a fragment of pure hydrate of chloral is placed in a test-tube or

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and heat being so excessive as to cause an active tendency of blood to the brain. The derangement of circulation and innervation was still further promoted by a ride in an open sleigh from the railroad station to the residence of the patient, and the return to the city in the evening in cars similarly heated, with further exposure to a drizzling rain and snow-storm which had set in. This trip was followed immediately by a severe congestive headache and intense facial neuralgia, concentrating more fully in the right inferior maxillary nerve, with a bulbous enlargement at its exit from the mental foramen and periodontitis of the teeth of the lower jaw of the same side. By the free external and internal use of the most powerful anodynes and resolvents, the severity of the disorder was mitigated, but not entirely overcome, as the soreness and neuralgia persisted, being greatly increased and paroxysmally intensified by the slightest exposure to cold and damp. After ineffectual efforts with the most approved local and constitutional treatment, we resorted to the internal use of iodoform, and with the happiest results in subduing the pain and resolving the swelling of the nerve and jaw. This agent could not, however, be as freely taken as was desirable in consequence of its objectionable ectrophic effects. While, therefore, it is an invaluable remedy, it must be used with discretion in order to avoid any injurious results. This case illustrates the fact that, by a judicious local and general medicinal treatment, the terrible malady above described may sometimes be relieved without the necessity of resorting to a dreadful surgical operation, which at the best is but little more than palliative.—Z.

wineglass with a little water, and a few drops of liquor potassæ allowed to fall upon it, no discoloration takes place, and there is evolution of pure chloroform, which can be detected by the odor. If the specimen experimented with is *impure*, a *dark* or *brown* reaction will result, and the odor evolved will be unpleasant. In this way a certain class of common impurities may be detected."

Bichloride of Methylene as an Anæsthetic. By Mr Charles Gaine. (*Medical Times and Gazette.*)—"I have administered it in a great number of operations, not only in my own special practice, but also for my colleague, Mr. Stockwell, at the Royal United Hospital, and in private practice, with the most marked success; notably in the following operations: lithotomy, reduction of dislocations, fistula in ano, recto-vesical fistula, resection of knee-joint, amputation of leg, excision of mamma, necrosis, cataract, iridectomy, etc.,—the oldest person operated upon being a woman, aged 70; the youngest, a child, aged 6 years. The shortest time in which anæsthesia was produced was twenty seconds, in a child, to sound for stone in the bladder; the longest, two minutes and a half, in a man, aged 24, for extraction of teeth—the shortest time which anæsthesia was maintained being forty seconds; the longest, thirty-five minutes. The recovery has always been rapid and complete.

"I first administered the bichloride of methylene in some half-dozen cases in 1868, but discontinued its use, because I found it less manageable than chloroform; the cause of my failure then, I have since discovered, was the admission of too much air in administering it. I subsequently employed the protoxide of nitrogen in my own practice, but the peculiar physiological phenomena exemplified in using this gas never impressed me so much in its favor as it has many others.

"In January, 1870, I read a paper by Mr. Bader, of Guy's Hospital, published in the *British Medical Journal* of January 9, 'On the Administration of Chloroform and other Anæsthetics.' In this paper the cause of my former failure with the bichloride was fully explained. I therefore resolved to give it another trial; and to the courtesy of my friend Mr W. R. Wood, of Carlisle House, Brighton, and Mr. Rendle, of Guy's Hospital, I am indebted for some valuable information as to the manner of administering it, and to the latter gentleman for a description of his inhaler also. This inhaler I have found to answer the purpose admirably. It consists of a hollow cylinder made of thick leather, about five inches long, and shaped at one end to fit the nose and chin, the other end having small holes punched in for the admission of air. It will be necessary to have three different sizes, as the efficacy of inducing rapid anæsthesia with the bichloride of methylene depends on the inhaler accurately fitting the nose and chin, so as to prevent the admission of air at that end. A flannel bag hangs loosely within the cylinder, on which the methylene is sprinkled.

"The following rules I have found of great importance, and the strict observance of them will tend greatly towards success in the administration of this agent: it should never be administered without first preparing the patient. Abstaining from food and stimulants of every kind should be insisted on for from three to four hours before the time appointed for administering it; all garments should be loose. Auscultation not revealing any morbid condition to contraindicate its use, the methylene may be administered in the following manner: the patient

being either in the recumbent or semi-recumbent position, forty minims should be sprinkled on the flannel bag, and the inhaler then applied closely over the nose and mouth. A slight choking sensation will be first apparent, which passes off rapidly; if not, remove the inhaler for an instant. In from half a minute to a minute (seldom longer) anæsthesia of the eyeball is complete, though it will continue to roll about, showing more of the sclerotic than usual. The operation may then be commenced. Remove the inhaler entirely, until symptoms of returning consciousness are seen, when, if the operation is not completed, renew the inhalation with half a drachm more methylene; in a few seconds the inhaler may be again removed. In this manner, by proper attention to symptoms, a patient may be kept under its influence for any reasonable time. Should the operation be of short duration, from forty minims to a drachm of methylene will suffice for most cases. With two drachms and a half I have kept a patient under it for thirty-five minutes for resection of the knee-joint. I have not had a single case of vomiting, and two cases only that gave me the least uneasiness, and these had both departed from the rules laid down as to stimulants, etc.

"To relate a number of cases would only occupy your valuable space for no useful end, but the following extracts from my note-book may not be uninteresting in comparing the effects of methylene with chloroform and protoxide of nitrogen on patients who had inhaled one or other of these agents before. In January last I was consulted by a clergyman, who, some five years since, had on three different occasions inhaled chloroform for removal of teeth. My friend, Mr. Fowler, who administered it, told me that each time he had the greatest difficulty in getting him under the influence of it, and he was always prostrated for nearly a week after it. It was necessary to remove some particles of necrosed bone in the upper jaw, and puncture a deep-seated cyst. This was accomplished under the influence of one drachm of methylene, and in three minutes from the commencement of the inhalation he was sufficiently conscious to converse with us, and inquire what had been done. He walked away a few minutes after, and has not subsequently felt the slightest ill effects.

"A young lady had inhaled 'protoxide of nitrogen' in London for tooth extraction. The first upper and lower molars on the left side were extracted; the corresponding teeth on the opposite side were broken in the attempt. It was necessary, for regulating purposes, to remove the stumps. She asked me to give her chloroform; she said she would not take gas again. Methylene was administered, and the stumps removed, and in five minutes she walked away without feeling any inconvenience.

"In the case of a woman, from whom it was necessary to remove all the remaining teeth (twenty-two in number), I administered protoxide of nitrogen; she was so uproarious, and subsequently became so blue with stertorous breathing, that I was only enabled to remove three teeth. A week later, I removed the remaining nineteen under methylene at one sitting, seventy minims only of the bichloride being used. A quarter of an hour afterwards she walked home, feeling no ill effects, further than the loss of her teeth. Very many similar examples could I mention, but, as I have said, no useful purpose will be served by so doing. Let it suffice that, in relating my success with the bichloride of methylene, I have confined myself entirely to what I have observed in administering this agent, and am alone responsible for any short-

comings in this respect. It is equally useful in long as in short operations, and only requires to be more generally understood to give it precedence over all anæsthetics yet known."

Chloræthyl, a New Anæsthetic. (*Boston Jour. Chem.*)—"The new anæsthetic, *chloræthyl*, or *æthyliden chlorid*, discovered by the distinguished Dr. Oscar Liebreich, of Berlin, the discoverer of chloral hydrate, is really an agent of great promise. We have during the past two months experimented with it considerably; and we find in our own case it produces anæsthesia quickly, and is free from any unpleasant after-symptoms. It certainly produces less nausea than chloroform or ether, the insensibility is very profound, and the agent has a pleasant odor. These are important considerations. The only drawback is its high cost, it being ten times greater than chloroform. With improved methods of manufacture, this objection may be overcome."

Oil of Peppermint as an Anæsthetic.—Dr. I. J. O'Brien writes (*Druggists' Circular*): "I became aware of the fact several years since, in the course of my practice, that the oil of peppermint possessed palliative and anæsthetic properties eminently befitting it as a valuable adjunct to my medicinal cabinet of neuralgic curatives.

"Alternating creasote as a styptic with the oil of peppermint as a sedative,* I have been remarkably successful in the treatment of abscess of the maxillary sinus—alveolar abscess and necrosis of the alveoli—after removing the cause, generally ulcerated teeth or fangs, and, as a consequence, necrosed bone.

"In such cases I have always adopted the positive of the antiphlogistic treatment—dispersed inflammation with the astringent heat of the creasote, and dispelled all painful consequences through the anæsthetical agency of the oil of peppermint."

Carbolic Acid deodorized by Oil of Lemon.—It is stated (*Eclectic Med. Jour.*) that "Dr. Yingling, of Huntington, Ind., has found that five drops of oil of lemon will deodorize four ounces of a solution of carbolic acid without any impairment of the medicinal properties of the acid."

"*Necrosis of Lower Jaw; Removal of the whole of the Ascending and part of the Horizontal Ramus; Recovery, with Good Movement.* Under the care of Mr. Thomas Bryant, Guy's Hospital.—The following notes are by Mr. R. S. Mutch:

"Sarah B., aged five years, was admitted with a swelling over the angle of the left inferior maxilla. The ascending and horizontal rami were both somewhat thickened. In the part of the cheek covering the angle of the jaw was a sinus leading to dead bone. Motion was only slightly impaired. It was found that all the temporary teeth were present in the upper jaw, and on the right side of the lower jaw; but on the left side of the latter were seen two incisors, and the canine, which was slightly everted. Behind this was a space corresponding to the two temporary molars; beyond the space stood the first permanent molar, apparently fully cut in front; and to the outer side of it lay exposed a portion of apparently dead bone. The soft parts on this side

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* They may be combined.—Z.

were somewhat thickened. The child appeared in other respects to be in good health.

"The history was to the effect that nearly a year and a half ago the patient had been confined to her bed for two weeks with a fever, in the course of which a swelling had made its appearance on the left side of the face, and had broken within the mouth. Since then some teeth had come away. Nine weeks previously she had become an out-patient; and while she was attending the hospital in that capacity a sinus had formed in the cheek, and Mr. Bryant had removed a portion of dead bone, together with one of the permanent teeth.

"The patient having been placed under chloroform, Mr. Bryant attempted to remove the exposed piece of bone, but it was too firmly fixed. He then carried an incision along the outer side of the horizontal ramus, one inch forwards from the sinus After several attempts, in which some small pieces of bone broke away, he succeeded in removing the whole of the ascending ramus, including the condyle. and part of the horizontal ramus. No constitutional disturbance followed the operation. She was discharged in eight davs, much relieved, but with the sinus still communicating with the mouth. When seen again, from two to three months later, she was able to move the jaw quite naturally."—(*The Lancet*)

Cystic Sarcoma of the Lower Jaw.—Mr. Wagstaffe exhibited to the Pathological Society of London (*Lancet*) "a specimen removed from a patient by Mr. Le Gros Clark, at St. Thomas's Hospital. The tumor involved the angle of the jaw, and distended the bone from just below the condyle to near the symphysis on the left side. The structure was cystic, with a firm sarcomatous matrix, and the features of particular interest were the existence of numerous small endogenous cysts in the interior of the larger cysts, these endogenous growths occurring in the epithelial lining, and being very readily isolable; and, next, the peculiar arrangement of the sarcomatous growth in cylinders or acini, running through a fibro-nucleated matrix."

Fibro-Serous Cyst of Jaw.—Dr. Sayre exhibited to the New York Pathological Society (*Med. Record*) "a fibro-serous cyst, removed from the inner angle of the left jaw of a gentleman aged 35. The tumor had been six years in growth, but had grown very slowly until last year; since then it had grown rapidly. (Two photographs of the case were exhibited, and the patient himself was also present.) Dr. Hamilton had seen the case in consultation, and had advised incision, on account of the depth of the tumor and the adhesions. Dr. Sayre decided, however, to perform excision, if possible. The adhesions were found more firm than had been anticipated, and there was some difficulty in dissecting the sac out. The jugular vein was exposed for $1\frac{3}{4}$ inch, but not injured. The fluid oozed out of the sac during the operation, but it was again rendered tense by a silk ligature passed round it, and at last came out entire. No vessels were wounded, so no ligatures were required. The operation was performed last Sunday week. The incision was made parallel to the fibres of the sterno-cleido-mastoid muscle. Excision in this case proved better than incision."

"*Undeveloped Eye Tooth.*—The second specimen exhibited by Dr. Sayre (*Ibid.*) was a portion of an upper jaw containing an undeveloped

eye tooth. The specimen had the following history: nine years ago a woman had presented herself with supposed cancer of the upper jaw. There was a tense shining swelling and apparent epulis of the upper jaw-bone. It was thought advisable to make exsection of the jaw. The tumor broke and blood escaped. There was considerable sloughing and more or less pain. The patient was discharged. A week ago she presented herself with a portion of the jaw still left. This was removed with a pair of forceps, and with it a large eye tooth which had not been developed, and which was probably the source of all the irritation."

Nævi, Treatment of, by the Introduction of Red-hot Needles.—"Mr. Croly communicated to the Surgical Society of Ireland a remarkable case of nævi occurring in a very young child. In connection with the face and head, there were four distinct vascular tumors. One was situated on the lower lip, a second in the right parotid region, a third on the back of the neck, and a fourth on the tongue. The first mentioned was treated by plunging red-hot needles through its substance. This method of treatment answered admirably, and was followed, curiously enough, by the spontaneous cure of tumors two and three. Mr. Croly was inclined to attribute this happy and unlooked-for result to the influence of the operation on the sympathetic nerve-supply of the nævi."—(*British Medical Journal* and *Medical Archives.*)

"*Perchloride of Iron and Manganese Injections in Fistulous Tracts and Hydrocele.*—Professor Marcacci (*Annali di Chemica*) has published six cases of fistulous tracts connected with diseased bone, and seven of hydrocele, in which the solution marking six degrees was injected in small quantities, and left but a short time. Judging from the success obtained in these cases by the author, the practice is worthy of imitation. However, we should not forget Mr. Pollock's sulphuric acid plan in fistulous tracts, or the liquor of Villate, so much praised in France, for the same pathological state. Nor have surgeons to complain of the injection of iodine or port-wine in hydrocele. Professor Marcacci states very frankly that, in the latter complaint, the perchloride produced an ugly thickening of parts."—(*The Lancet.*)

Triple Fracture of the Lower Jaw. Case by T. Curtis Smith, M.D., of Middleport, O.—"On the 5th of Sept., 1865, I was called to see Mr. G., aged 69; farmer; healthy; of steady, good habits, and, considering his age, robust. Six days previous to my first visit, while grinding cane, the lever to which the horse was attached caught against the left side of his head, on a line corresponding with the inferior margin of the jaw and point of the mastoid process of the temporal bone. The right side of his head was carried against the sharp corner of the solid framework of the grinder, on a line corresponding exactly with the one on the left side. As the lever passed over his head, it produced fracture of the inferior maxilla at the symphysis, and a fracture in each lateral half, about eight lines anterior to the angles of the jaw. It also tore off the left ear and the integument and fascia to the margin of the calvaria. It was seen the same day by a physician in good standing, and of many years' experience, who pronounced it a fatal injury, he diagnosing 'fracture of the skull.' Left it without treatment of any description. Hence the long period (six days) that elapsed before any treatment was insti-

tuted. I cleansed the wound, drew down the integument, and ordered free and frequent applications of cold water to it. Found the jaw fractured as above described, but not in the least displaced. It retained its natural situation, the fragments being in perfect apposition as long as he did not talk or attempt to eat. I put on a dressing to steady the fragments (Barton's dressing), but it was painful and heating, the temperature of the atmosphere being very high. He would not allow it to remain. Perfect union of the fragments occurred without the slightest deformity, and practically without the sign of a dressing. At the symphysis it was not solid until after four months, but near the lateral angles solid union had taken place in six weeks. He was kept on slops and fluid diet for the first eight weeks. I report the case on account of its being a triple fracture, and not recognizable by any apparent deformity as long as the mouth was kept closed; but more especially on account of such ready union without any apparatus and without deformity, and that too in an individual 69 years of age. The other injuries healed kindly, leaving off, of course, the whole external left ear, but not injuring the hearing.

"Our authorities report some cases of double and triple fracture of the lower jaw. Hamilton reports eleven cases of double and triple fractures. Of these, three were triple fractures, two of them resembling my own case. He also reports the case of 'an Irish laborer, aged 17 years, who was thrown from a wagon, breaking the inferior maxilla on both sides through the body, and, also, exactly in the centre, vertically between the central incisors.' With this case he seems to have had great difficulty in securing and retaining the fragments in perfect apposition. He also mentions a case recorded by Howzelot, 'in which a fall from a height produced, at the same time, a fracture of both condyles, of both coronoid processes, and of the symphysis,' making five fractures in the same maxilla. In my case the symphysis fracture was vertical, the two lateral oblique. The fragments were evidently held in apposition by the muscular attachments being such as to balance the fragments equally."—(*Med. and Surg. Reporter.*)

Fossil Teeth.—"The Huron Shale, as first found by Mr. Hertzer, contains *fossil remains of fishes* and wood inside of large concretions; and one of the fishes, called the *Dinichthys Hertzeri* by Newberry, had a head three feet long by two broad, with the jaws over two feet in length and five inches deep; the two jaws met in front to form one great triangular tooth which interlocked with two in the upper jaw seven inches long and more than three wide."—(*Amer. Jour. Sci. and Arts.*)

Characters, Structure, Functions, and Modifications of the Teeth and Allied Organs in the Mammalia.—The following is the programme of a course of eighteen lectures on this subject by Professor Flower, F.R.S., Hunterian Professor of Comparative Anatomy and Physiology, Royal College of Surgeons, England: "Essential characters and structure of teeth. Development and succession of teeth. Classification and nomenclature of teeth. Dental formulæ. Modifications of the characters of the teeth in the different groups of the mammalia. Teeth of man. Teeth of *Simiina.* Old-world monkeys. New-world monkeys. Teeth of *Lemurina.* Teeth of terrestrial *Carnivora.* Dogs

and allied forms. Cats and allied forms. Bears and allied forms. Teeth of *Pinnipedia.* Sea-bears and seals; walrus. Teeth of *Insectivora.* Hedgehogs, moles, shrews, etc. Galeopithecus. Teeth of *Chiroptera.* Frugivorous bats, insectivorous bats, blood-sucking bats. Teeth of *Rodentia.* Hares, guinea-pigs, porcupines, rats, squirrels, etc. Teeth of *Cetacea.* Odontocetes, or toothed whales; dolphins, porpoises, narwhal, sperm-whale, ziphius, and allied forms. Zeuglodonts. Mystacocetes, or whalebone whales; rudimentary teeth. Structure and function of baleen or whalebone. Teeth of *Ungulata.* Perissodactyles; ancient and modern forms, palæotherium, horse, rhinoceros, tapir. Artiodactyles; pigs, hippopotamus, anoplotheridæ, camels, chevrotains, and pecora (deer, giraffe, antelopes, sheep, goats, and oxen). Teeth of hyrax, of toxodon, of typotherium, and other anomalous forms. Teeth of *Proboscidea.* Elephant, mastodon, dinotherium. Teeth of *Sirenia.* Dugong and manatee. Teeth of *Edentata.* Sloths, ant-eaters, armadillos. Teeth of *Marsupialia.* Opossums, thylacine, dasyures, perameles, phalangers, kangaroos, wombats. Fossil marsupials. Value of dental characters in drawing inferences as to the affinities and habits of extinct animals. Horny teeth of *Monotremata.* Ornithorhynchus."—(*Med. Times and Gaz.*)

"*Spontaneous Combustion.*—Instances of spontaneous combustion are so common nowadays that we cannot help thinking that people are becoming more careless than they used to be, or else they are ignorant of the nature and the causes of this kind of combustion. The latter, we doubt not, is more frequently the case, and this is our reason for taking up the subject here.

"Our readers are aware that ordinary burning is nothing but rapid *oxidation*, or the union of the combustible substance with the oxygen of the air. But they may not all be equally familiar with the philosophy of *slow* combustion, which is a more gradual oxidation of a substance. The *decay* of animal and vegetable substances is a process of this sort. When a log of wood rots in the forest, it is as really burned up as when it blazes on the hearth of an old-fashioned fireplace. The carbon and hydrogen which make up the greater part of its bulk are oxidized in the former case, as in the latter, and the products of the combustion—carbonic acid and water—are the same. And it has been proved that the *heat* generated in both forms of burning is precisely the same; the only difference being, that in ordinary burning it is all set free in a short time, while in decay it is developed so slowly that we do not perceive it.

"The *rusting* of metals is another instance of this slow combustion, the *rust* being the metal after it is burnt, or oxidized. Heat is generated in this process, as in that of decay; and if the rusting can be made sufficiently rapid (as when a large pile of iron filings is moistened and exposed to the air), the rise of temperature is readily detected. A remarkable case of heat developed in this way occurred in England during the manufacture of a submarine cable, and is described in Rolfe and Gillet's 'Natural Philosophy:'

"'The copper wire of the cable was covered with gutta-percha, tar, and hemp, and the whole inclosed in a casing of iron wire. The cable, as it was finished, was coiled in tanks filled with water: these tanks leaked, and the water was therefore drawn off, leaving about one hun-

dred and sixty-three nautical miles of cable coiled in a mass thirty feet in diameter (with a space in the centre six feet in diameter) and eight feet high. It rusted so rapidly that the temperature in the centre of the coil rose in four days from 66° to 79°, though the temperature of the air did not rise above 66° during the period, and was as low as 59° part of the time. The mass would have become even hotter, had it not been cooled by pouring on water.'

"In this case the heat set free caused the oxidation to go on faster and faster; and this is what occurs in spontaneous combustion, which is simply 'rapid combustion developed gradually from slow combustion.' There is no more common source of such combustion than the oily rags used by painters in their work, or the cotton-waste used for wiping machinery. When such substances have become saturated with the oil, if they happen to be thrown into a heap, the oil begins to oxidize slowly; but the heat produced makes the oxidation more and more rapid until the mass bursts into a flame. Oils that oxidize readily, like cotton-seed oil, are especially liable to take fire. Oil spilt on dry sawdust has been known to ignite in the same way.

"It sometimes happens that hay, cotton, and many forms of *woody fibre*,—as tow, flax, hemp, rags, leaves, spent tan, straw in manure heaps, etc.,—when stacked in large quantities in a damp state, take fire spontaneously. Here the oxidation is merely that of incipient decay or fermentation, which is promoted by the dampness. The confined heat accumulates, as in the case of the oily rags or cotton, until it is sufficient to cause rapid combustion. According to M. Chevallier and others, pulverized charcoal, prepared for making gunpowder and stored in heaps, has been known to ignite, when neither oily nor damp; the very slow action of the oxygen of the air upon the charcoal itself being gradually accelerated by the heat produced until it set it on fire.

"Whether grain or seeds of any kind be liable to spontaneous combustion is doubtful; though several French *savans* came to the conclusion that a barn had caught fire from the spontaneous ignition of damp oats stored in it. But however that may be, it will be evident from the facts we have given that many fires, involving great destruction of property, have been the result of spontaneous combustion; and it is probable that many conflagrations ascribed to incendiarism have really owed their origin to the same cause."—(*Boston Jour. Chem.*)

"*Passivity of Iron; and on Electrolysis.* L. Schönn.—The author states that, when a piece of iron is tightly fastened to a piece of charcoal, care being taken to make the contact between the charcoal and well-polished iron as perfect as possible, and also to immerse both these substances simultaneously into nitric acid, the iron is not dissolved; but, as soon as either the metal or the charcoal are touched, under the surface of the acid, with a strongly electro-positive metal (for instance, zinc), the iron becomes at once active again, and is dissolved in the acid with a copious evolution of gas. When some very dilute hydrochloric acid, so weak that it hardly acts upon zinc, is poured into a platinum basin, and a piece of zinc placed in that liquid in metallic contact with the platinum, a copious evolution of hydrogen takes place at once, precisely on the spot where the zinc, platinum, and acid are in contact. If, instead of the very weak acid, an aqueous solution of corrosive sublimate

is taken, and the experiment repeated, metallic mercury is separated at the point of contact between the zinc, platinum, and the solution. The author finally states that, from a series of experiments made by him, he has found that all desired electro-chemical actions can be called forth at pleasure by simply placing either two different metals, or charcoal and metals, in contact with a fluid."—(*Annalen der Physik und Chemie* and *Chem. News.*)

"*Coating Iron and Steel with Brass.*—It is often considered an advantage to be able to coat steel or iron with brass by direct casting, as in this way the troublesome labor of combining them by means of screws, bolts, or pins is avoided. The equal expansibility of the two metals thus united is, however, opposed to a permanent union; and besides this, the coating does not usually adhere with much tenacity. But it is stated that the following alloy will attach itself so firmly to iron and steel as to resist ordinary influence for their separation. This consists of 3 parts of tin, 39½ of copper, 7½ of zinc. In melting these substances together, it should be borne in mind that zinc tends to evaporate at high temperature, so that care must be taken not to get up too great a degree of heat."—(*Phila. Ledger.*)

"*Soldering Cast-iron, etc.*—Can any of your correspondents let me know if there is any kind of fluid that can be used, with soft solder, to solder cast-iron together, and if it will do for stove foundry iron and common gray iron, providing the surface be clean? I use chloride of lime, water, and sal ammoniac for wrought-iron, steel, brass, copper, zinc, etc.: chloride of lime, two fluidounces; water, two fluidounces; sal ammoniac, one half a teaspoonful; but it will not work on cast-iron to any advantage."—(W. S. B., *Sci. Amer.*)

"*Wire of Solder.*—Take a ladle and bore a few holes in the bottom in a line with one another, say six holes, about the size you want your wire. When you get ready to pour, have a strip of smooth iron or steel (a saw blade being very good); have your pierced ladle in your left hand, having previously heated it in the melted metal; then dip up some metal with an ordinary ladle with your right hand, and pour it through the pierced ladle, at the same time moving the two along the strip of iron, and a few inches above it. After you get the hang of it, you can make very pretty wire, smaller or larger as you move fast or slow."—(H. W. S., of Ohio, *Ibid.*)

Leather fastened to Iron and Steel.—"Dr. Carl W. Heinischen, of Dresden, gives the following recipe for the above purpose: 'Spread over the metal a thin, hot solution of good glue; soak your leather with a warm solution of gallnuts before placing on the metal, and leave to dry under an even pressure. If fastened in this manner, it is impossible to separate the leather from the metal without tearing it.'"—(G. E. M., *Ibid.*)

"*Cleaning Filigree Silver.*—It is said that the best method of cleaning articles of silver, such as filigree work that has become blackened by sulphur, when mechanical application is impossible, consists in immersing them in ammonia in which a rod of zinc has been inserted."—(*Philadelphia Ledger.*)

THE

DENTAL COSMOS.

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ORIGINAL COMMUNICATIONS.

CASE OF CEMENTAL HYPERTROPHY.

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It will be remembered by the readers of the Dental Cosmos that, at the February meeting of the Odontographic Society, there was exhibited a remarkable specimen of hypertrophy, connected with the roots of a left upper molar, which had been extracted for a laborer by S. H. Whitmer, of Newport, Perry County, Pennsylvania —the entire mass being $2\frac{1}{2}$ inches in length by $2\frac{5}{8}$ inches in circumference, and weighing $12\frac{1}{2}$ pennyweights. The accompanying illustration, Fig. 1, gives a fair idea of the appearance presented by the specimen, which has been generously donated to the museum of the Philadelphia Dental College by the gentleman who removed it. To the right of the palatine root, and connected with it, will be observed a small portion of enamel, the outgrowth, apparently, of the germ either of a wisdom or of a supernumerary tooth, and from which the hypertrophy may have originated, and then enveloped the roots of the molar.

Fig. 1.

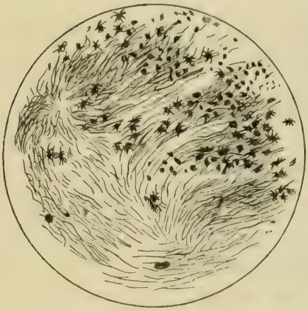
But for the fact that the gentleman who performed the operation states that it was removed from the left side of the superior maxillæ, the general appearance of the buccal and palatine roots would lead one to infer that they belong to a right upper molar; and this opinion has been invariably expressed by those to whom the specimen has been shown, and who had no knowledge of which side it came from. Had they been the roots of a right superior molar, it would have placed almost beyond a question of a doubt that the hypertrophy was the product of the germ of the wisdom tooth.

Microscopical Appearance.—The specimen having been placed in my hands for microscopical examination, I found, as anticipated, that it

was composed of cementum—approximating, however, very closely to secondary dentine in its appearance. I took off three thin sections, one under the other, from the lower part of the mass.

The first or outer section presented only the *lacunæ* and *canaliculi* characteristic of cementum. The second cut differed somewhat from this, in having, in addition, certain spaces of no definite shape, and apparently being the blending of a number of the *lacunæ*. In the third section the *lacunæ* were quite numerous, and the *canaliculi* starting from them were of considerable length, and pursued a tortuous or curved direction, resembling very much the appearance and course taken by the dentinal tubuli in secondary dentine. Fig. 2 is from a drawing of the section as seen under the microscope. A few canals (cut transversely), evidently for the passage of blood-vessels, were observed, but no Haversian canals as in bone, with the lacunæ and canaliculi arranged in concentric layers around them.

FIG. 2.



In conclusion, it may not be amiss to direct attention to the impropriety of applying the term *exostosis* to hypertrophy of the cementum.

In taking exception to the employment of this term in connection with a tooth, it is with the desire of limiting the application of the word to its proper and legitimate sphere. I am well aware of the fact that eminent writers on surgery and dentistry almost invariably use this word in connection with the hypertrophied roots of the teeth, but that does not necessarily make it right.

Correctly speaking, EXOSTOSIS (from the Greek ἔξω, "without," and ὀστεόν, a "bone") is an osseous tumor on an exuberant growth of osseous material on the surface or in the internal structure of a bone, including the enlargement of a part or the whole of a bone.

It will be seen by this definition from "Thomas' Medical Dictionary," that to prevent confusion the term should be restricted to bony growths alone. It may be said that the structure of cementum is so closely allied to bone that it is an attempt to establish a distinction without a difference. Any one who has used the microscope in the examination of bone and cementum, is aware of the fact that there are characteristic features belonging to each which will enable those who are familiar with them to distinguish one from the other with ease,—the lacunæ, canaliculi, and Haversian canals being invariably present in bone, while the lacunæ and canaliculi only are found in cementum. It may be said that this is only a difference of degree; but it is just such a difference as to justify the distinction made, and enamel, dentine, cementum, and

bone are but difference of degree in which an animal basis is impregnated or united with mineral constituents.

The all-important point which I desire to establish in objection to the use of the term under consideration is, that this hypertrophy is an enlarged growth of one of the dental tissues (cementum), and not from bone. This fact has not only a bearing upon a correct apprehension of the pathology of the case, but also upon the character of the operation demanded in the removal of the abnormal structure.

NOTES FOR A MEMOIR ON THE PATHOLOGY OF THE TEETH.

BY A. C. CASTLE, M.D.

Read before the First District Dental Society, New York.

(Continued from page 186.)

Third Group. Chalk-White Teeth. The Transparent-Yellow Teeth with Blue Edges, and the Chalky-Yellow Teeth.

If we define health as being the integrity of every structure, and the perfect and harmonious play of every function, we give a true definition, but not a useful one. Man is subject to the same destructive agents from without by which the lower animals are affected. But there is no doubt that he is more easily and much more frequently exposed to diseases than any of the inferior creatures. The uniformity in construction, pathogenic characteristics, and duration of the teeth,—always excepting animals fed upon "swill" and unnatural food,—even of the carnivora, is worthy of our attention in comparing them with the remarkable pathological differences, variation in elementary constituents, and physical outlines characterizing the human dental organs. The lower orders of the animal creation, however, possess the great advantage over exalted reasoning humanity,—a perfect-working, healthy stomach,—which produces healthy and uncontaminated fluids, and, as Shakspeare has it, "sweet breath."

A sound stomach is absolutely necessary to a sound body, and a sound body is as equally necessary to a sound mind; and as the enjoyment of a sound mind in a sound body is the greatest of all terrestrial blessings, it is incumbent on every rational inquirer to devote a portion of his time to the research of such useful objects as may contribute to improve, and, if possible, to insure a state so desirable. In an eminent degree, then, may weak, suffering humanity look to dental science not only as a benefactor, but for relief from a very distressing portion of "the ills that flesh is heir to."

The ancients conceived the idea of "*a principle of life*," which they compared to "*a radical fluid!*" The alchemists expected to find this

original entity in gold, by the use of which they pretended that the human body might acquire the solidity and durability of that metal. EUREKA ! Some dentists, at this late day of scientific knowledge and insight into natural philosophy, apply the same pretensions to natural rotting teeth ; that by the application of amalgam, or gold,—as they apply it,—the original entity of the teeth is to be rendered as durable, as dense, and as solid as they pack these materials into the teeth.

With the third group of teeth—apart from the pathological conditions of the previous groups—the perplexities, the obstacles, the difficulties, and the vexatious humiliations of the dentist really begin. In the previous groups an innate constitutional vigor assists the dentist, and renders his endeavors permanent for a reasonable time of wear and tear, as well as against numerous destructive causes. But here, with these teeth, he has to contend with and against almost insurmountable constitutional, natural, physical, and *moral* obstacles. First, constitutional debility of the habit of body ; second, external and internal agents working their destruction ; third, the physical imperfection of the organization of the teeth themselves ; and last,—and far from being the least,—the dental surgeon ! not being allowed the medical privilege of applying a constitutional treatment to improve the general health, even where the susceptibility of impression is intensified by chronic anæmia, nervous debility, or any other cachectic diathesis ; the influences of which, upon the dental organs, increase the destructive process faster than dento-mechanical ingenuity—in lieu of proper medical treatment—can resist them. That he is denied this common-sense view and privilege of constitutionally treating with the view to reclaim *a debilitated dental organization*, the conservation of which he has selected as his "specialty," the dental practitioner has none others " to thank," and only *himself* to blame for the negative medico-dento-surgical position he holds in the view and estimation of the public. He has impressed the minds of his patients, and the medical faculty, that his excellence as an artistic dental surgeon is *practically* and *eminently mechanical ;* hence the family physician will not meet, nor submit, nor permit what he conceives to be his family medico-professional rights to be interfered with by a nondescript medical mechanic prescribing for *his* patients. He will not sink his "*Lectori Salutem*," diploma of his medical exaltation, nor lower his professional status, nor compromise his doctoral credit, by placing himself on the same footing with those whom dentists themselves have taught him to esteem no higher than an operative dental mechanic. In the transitional condition of the dental profession, the practicing dentist—no matter how capable—dare not assume his professional position and right with others practicing specialties in the healing art. Were he to prescribe medicines to improve the general health of patients, he might—as without doubt he would—have his

"customers" recommended to consult other dentists more mechanically obsequious and thankful for "cold victuals." In addition to these difficulties besetting professional educated dentists, is the absence of that dignity dependent upon professional governing ethics.

In the gardens of graves and of rest, consecrated in the hearts of every family, Nature spreads her richest mantle over infancy and loveliness, youth and beauty, manhood and strength, and age, reaching the crown of life. In the midst of hills crowned with monarch trees of the forest; in remote dells and groves; upon terraced slopes and in secluded arboretums, all picturesquely arranged, and artistically clad with cypress and shading evergreens; with vernal and summer flowers, and sad chaplets of fond remembrances,—the gorgeous magnificence of Art rears the grave memorials of untold numbers. *All* of these had medical attendants who failed to cure their fatal maladies. But doctors do not challenge their profession, before medical societies, that had these grave subjects been treated as *they* would have treated their disorders, they would have survived forever. No; they remain silent as the grave,—leaving impossible boasting to Moffat's Life Pills and Phœnix Bitters. Such are Phœnix Dental Bitters. Teeth may decay and die. Gold fillings may be rotted from the teeth, or from cause, "come out." Inflammation may supervene malleting gold plugs into teeth. The teeth, from many causes, may be in every way defective, or—like these classes of teeth—soft, tender, and impressible. Any of these accidents are attended with troublesome complications, constitutional as well as local.

In surgery, *force*, chloroform, and able assistants are the surgeon's adjuncts; in dentistry, cologne-water and the *suaviter in modo*, diamonds and gold sleeve-buttons. A brown-stone house and pomaded hair are the dentist's adjuncts to coax successfully into submission. To overcome fretfulness, "nervousness," caprice, restlessness, and *inattention* which, with really high, nervous, hysterical temperaments, bodily debilities, bad breath, *fear*, and other pathological antagonisms of the patients, are part of the exhausting embarrassments which combat the dentist's most zealous efforts.

Notwithstanding the fearful experience of wear and tear upon the operator's nerves, by all, we listen monthly to artisans and apothecaries who, as a *dernier ressort*, pick up the profession *as a trade*, and who, by their own conceited approbation, elect themselves the oracles of dental infallibility, and before their dental associations, and at their "odontological meetings," exalt *their* "method" of making the dental organs last forever, by comprehensively sopping creasote into teeth daily, for months, and then "leaving a little sop of the creasote in the fangs and filling over it;" forgetting—that is, assuming that they ever were aware of the circumstance—that the dental system, apart from chemical and

other destructive causes, and mechanical wear and tear, is equally liable and exposed to be affected from constitutional derangements, acid, gout, rheumatic, and mercurial secondary diathesis, febrile derangements, gastric irritations of the mucous membrane of the digestive organs, stomatitis, dyspepsia, indigestion, cutaneous diseases, etc., which can be only reached by that treatment which strikes at the root of the remote and exciting cause ; or by means of improving the general health, and thereby stimulating and assisting the *vis medicatrix naturæ*, or in other words giving increased force to the vital healing powers of Nature, that by her beneficent laws the exciting cause may be destroyed.

I most earnestly desire that my remarks may not be construed as reflecting, *in the remotest manner*, upon educated gentlemen whose professional endowments are not only distinguished, but who, I proudly acknowledge, daily add new lustre to the importance of the dental art, and who would, doubtless, be gratified to have the public and the medical faculty draw a line of demarkation, by placing the educated of the profession upon the exalted footing which its true character demands, as being an auxiliary part of—as it is admitted into the most distinguished London hospitals—and collateral science with the healing art. My hints refer to the pathological moral of the dental profession *at large*, showing that respectable, true knowledge is equally important in its connection with these hints upon the true pathology of the teeth and their scientific, conservative treatment.

I have subdivided the third group into three classes, the organization of which is represented by their physical character, and which presents them in their highest original physical grade of appearance, to their descending modifications, which might be extended under the head of subdivisions ; some presenting a chaotic ossification of accretions, covered with a semi-crystallized, mottled-colored enamel ; others exhibiting a smooth enamel of a dark, cloudy hue, with dirty-looking lime-spots surrounded by dirty-appearing yellow margins, or dirty-yellow lime-spots slightly raised and surrounded by dirty-white margins. Others, again, present a chaotic combination of cartilage, bone, lime, and enamel admixture. These several orders of teeth exhibit the true and peculiar characteristic diathesis of each and every individual or family constitutional organization. And if blood will *tell*, in no other instance can functional discrepancies of the secretory processes be more clearly observed and defined, as furnishing and forming imperfectly organized material, and exhibiting hereditary tendencies and constitutional predispositions, than in these teeth. The only digression may be attributed to a curious but well-established phenomenon—that is, the disappearance or omission of constitutional tendencies during one generation to appear in the next. This has been termed Atavism.

It is not uncommon, in addition to the teeth being inherited from one

or the other of parents, or ancestors, to observe them blending the constitutional character of both. For example, the front teeth exhibiting the superior organization of the one parent, and the back, molar teeth presenting the strumous, or phthisical, etc. of the other, and *vice versa.*

Lime predominates in this class of teeth,—hence their structure is soft and brittle. They frequently "crumble away" in the mouth without apparent cause; but which is explained by certain conditions—and they are more certain than otherwise—of the system. These conditions are too often superinduced by mode of living, want of pure air, the need of out-door exercise, lack of nutrition, *i.e.* non-assimilation of the food with the blood, overstudy, overwork, overheated sleeping apartments, mental anxiety, pneumo-gastro-enteric debility, respiratory hysteric nervous affections, etc.; the result of which is nervous dyspepsia and all its concomitant evils, not the least of which is the elimination of sulphur, etc., and other equally obnoxious gases,—hence foul breath, wind, and puffed stomach, the generating and elimination of phosphoric, lactic, carbonic, and other acids, all of which produce their several deleterious influences.

In the sublimity of the perfection of the Creator's work, the evidence of organization demonstrates that the teeth should not be encumbered with peculiar and inevitable elements of early decay. Nature cannot resist "the sins," etc. Doubtless Nature's design is to render her organization as firm and as solid as the oak, and that the teeth shall be of sufficient enduring strength with power of resistance to last until age atrophies them; that their permanence shall be no longer required than to be useful to the body, and then,—as in the lower order of animals,—to fall from the mouth. As Shakspeare describes decadence:

> "Last scene of all,
> That ends this strange, eventful history,
> Is second childishness, and mere oblivion,
> Sans teeth, sans eyes, sans taste, sans everything."

To preserve the teeth to this end, how grandly beautiful and simple is Nature's provision and arrangements for the protection of her remotest equally important organs! Natural animal chemistry in her silent laboratory of the animal economy, through the functions of the salivary glands, elaborates an *antiseptic alkaline* fluid,—the saliva. While the stomach remains in its healthy and normal functional condition, no more acids are generated than are necessary to the chemical process of digestion; but when the acids, by any accident, are in excess, the alkaline saliva directly neutralizes them; and when these acid eliminations exceed the neutralizing power of saliva swallowed, "acid stomach," acid eructations, "water-brash," "heart-burn," etc. are the results. These acids, either eructated or "worked" up the mucous membrane into the mouth, meet the saliva freshly poured from the

salivary glands. A chemical combination takes place,—with whatever acid it may be,—and the phosphated, oxalated, or carbonated lime, etc. is precipitated and deposited upon the teeth, mixed with various matter of the mouth, throat, and lungs, and forming (in these constitutions) the filthy, pasty substance, termed "*tartar*," sometimes in disgusting quantities. Singular as it may appear,—as a rule,—this filthy accumulation protects the parts of the teeth it covers, from the onslaughts of the super-excess of acids. As the mechanical action of coughing is produced by an irritation physiologically intended to relieve the respiratory organs of offending matter, the very act of coughing, by its reflex action, super-excites and increases the irritation, and the consequent exhaustion of the nerves of respiration, that its functions are intended to relieve. In like manner the chemical combination depositing the tartar, while it protects the teeth one way, seriously injures them in another way, by mechanically pressing the gums from the necks of the teeth,—their most delicate and tender part,—or by causing inflammation of the gums and their suppuration, and by gradually insinuating itself between the teeth and gums, and impinging upon the bone sockets, causing them to recede by exciting the absorbents to act upon them, and the loosening of the teeth consequent upon the loss of their osseous support. *Obsta initus*—check the beginning of evil by removing it.

It is worthy of remark, that salivary calculus is never deposited adherent to the sockets of the teeth, and although pounds after pounds of phosphate and carbonate of lime are chemically formed and precipitated from the vital fluids of the animal economy,—sufficient in quantity, after a year or two, to furnish material to *reconstruct* a hundred sets of second or even third dentition, but all of which is swallowed into the digestive laboratory, or expectorated from the mouth, and is forever lost to the animal economy,—yet, with this singular proof staring us in the face, we are told, in all seriousness, by some, that they daily recuperate, reconstruct, and re-establish anæmic and cachectic teeth, and renew their bone sockets with as much certainty as the genial rays of the vernal sun prepare the atrophied grass for the vigor of its summer luxuriance. All this is effected, too, by a few grains of scientifically prepared manure, in the shape of phosphated medicaments.

Constitutional aberrations frequently cause the salivary glands and mucous membranes of the mouth, etc. to secrete *acidified* in place of the alkaline fluid. With this acid diathesis the teeth decompose very rapidly; the enamel presenting the appearance of a dirty-yellow, a dirty-white, or a white-bleached calcined chalky substance, as if burnt by the agency of fire. This acid-affected enamel and softened bone dentists term "white decay." The corrupted bone is exquisitely sensitive, and difficult to be explained, for when removed the healthy bone beneath—in a large number of cases—is insensible to the touch

of the instrument. What an everlasting blessing to suffering humanity, and what a chance for infallible dental oracles to prove their assertions by demonstrating before Dr. Daboll's never-went-to-school dental clinics *their* method of making these teeth last forever!

The teeth, we know, are alkaline; and we also know that acids soften and decompose their substance. Some acids, however, have less affinity for lime than others; these penetrate the pores of the enamel, and, while they do not actually combine with the lime chemically, they destroy the vitality of cohesion. Soda (Vichy) water, bread, cakes, tea-biscuit, etc., containing an excess of saleratus, this alkaline combines with the acid contained in the pores of the bone and enamel, and by the sudden evolving of the gas produced by the chemical union of acid and alkali, produces a diminutive miniature process of "blasting," causing a disintegrating or "crumbling away" of the teeth. This circumstance has furnished an idea to those who jump at conclusions, that saleratus is a destructive agent to the teeth. Some years ago, in the solemn council of a dental convention, the meeting recorded its opinion "that the saleratus we use in the manufacture of our bread is the cause of the early destruction of the teeth,"—Dr. Baker indorsing the debate with the statement that *he* "found that in a solution of saleratus a set of teeth was destroyed in two weeks." Yet, again we see opposites producing the same effects. After long debility,—whether the concomitant of anæmia, gestation, lactation, or *obscure* causes,—and health again restored, the salivary glands secrete a healthy alkaline saliva, and the stomach is free from abnormal gastric acidity. We find that with the debility of the system the teeth have been sympathetically—(as, indeed, all teeth are in all constitutional debilities)—affected. "Oh, doctor, I have been ill a long time and my teeth are all gone to ruin," is the exclamation in every dentist's practice. Thus debilitated, the teeth to a certain extent are made more porous and less vital; they are saturated with the alkaline saliva—(one of the physiological, antiseptic, alkaline purposes of this fluid is intended to protect the teeth)—and the contact of acids, whether from vinegar-pickles, vinegar-salads, lemons, etc., produces the same chemical evolutions and the same "crumbling away" or gradual disintegration.

The transparent-yellow teeth with blue edges present the first order of teeth organized with an excess of gelatinous tissue. Their texture and structure, as a consequence, render them soft. In the first class of this group the operator oftentimes, when cutting down through the decayed portion of the tooth, slips the instrument into a lime accretion of bone, causing acute pain. This is often mistaken for nerve-tissue, and mischief is frequently done by the application of arsenic and other corrosive poisons for the purpose of destroying the nerves. These corroding, irritating agents, under such circumstances, do not reach the

nerve-tissue, but they poison the substance and vitality of the gelatinous bone. A second and a third time arsenic is inserted into the teeth, and acute inflammation of the nerve and periosteum is superexcited, and, there being no outlet for the decomposed nerve-matter, which, like decomposed brain-matter, is exceedingly poisonous, INTRO-DENTAL ABSCESS is formed, with all its grievous concomitant evils, even to caries, necrosis, and exfoliation of the jaw-bone itself. Sometimes the dental instrument encounters an almost cartilaginous substratum, the opposite of the lime accretion; the pain, if possible, is more acute. The color of these teeth, under ordinary circumstances of the death of their substance, is altered to a dark-greenish purple or blue-green hue; and in none, the succeeding group excepted, have the structure and substance of the teeth so high a degree of sensibility as has this cartilaginous bone organization. This "*sensitive dentine*," by which it is known in dental nomenclature, can be recognized as proving Dr. Horner's *materia vitæ diffusa* and Hunter's nervous matter in the vital fluids.

The necks of these teeth are acutely delicate—(as indeed the necks of all teeth are their most tender part)—and sensitive to external agents; and notwithstanding the subject of the *mischief done to the necks of the teeth* by "ill-adapted dentures"—(meaning the clasps by which artificial teeth are secured to the natural teeth)—is an annual dish served up before dental associations to argue upon, they recommend the use of floss silk—with its acute fibres—to be drawn between the teeth to cleanse, rather say, cut into them. And one doctor (a New York dentist?) offers "for sale at the dental depots and principal druggists in New York and Philadelphia" what he euphoniously and delicately terms THE LADY'S (!) TOOTH PRESERVER. In the fullness of his simplicity he asks for information—"Why do the teeth decay '*between*' them?" He enlightens himself by answering his own philosophical question: "Because food remains in the spaces long enough to undergo fermentation, which produces an acid that acts upon the enamel and eats it away." The doctor then recommends "the fillet of rubber to pass readily where no toothpick will go; and *näively* adds: "It"—the fillet of rubber; the Lady's Tooth Preserver—"will *also* indicate by a slight feeling of tenderness *when* the teeth require *the services of a dentist*." And this is dental science! The merest tyro, studying physiological intention, ought to know, *that upon the healthy, compact, firm embrace of the gums to the necks of the teeth mainly depends their solidity in their sockets, their permanence*, and usefulness free from uneasiness. Common sense indicates this truth. By this unpardonable ignorance the gums are not alone irritated, but the necks of the teeth also, and the crusta petrosa is ultimately destroyed; by the destruction of which the gums never adhere to the necks of the teeth again. The gums are rendered "spongy," "flabby,"

etc.; they are tender and bleed upon the slightest touch;—a tendency they possess in these constitutional diatheses without the addition of ignorant, outrageous, superexciting causes.

In addition to the injury perpetrated upon the necks of the teeth by destroying the adhesion of their protecting, warming, nourishing gums, external irritating agents excite the dental absorbents into activity, which suck the vital parts from the roots, producing atrophy, looseness in their sockets, and the absorption of the apices of the fangs, causing constant tenderness, often extending to acute neuralgic symptoms. The gums, in connection with these classes of teeth, are either of extreme delicacy or of unusual thickness. The sockets—alveolar processes—are thin and spongiform in their texture, and through the peculiarity of the periosteum of these and that of the succeeding group of teeth, in a large number of instances, would seem to unite the teeth and sockets, so that with difficulty they can be separated. It is of frequent occurrence to detach portions of the sockets with the extracted teeth, and *no injury is done to the jaw*, although patients will always insist that their jaws were broken.

The third of the classification of this group, the chalk-white teeth, possess a uniform excess of lime constituent in their structure. Often we observe, as if raised by an air-bubble beneath, small, half-developed nodules of brown or yellowish lime deposit on the face of the enamel. The teeth are brittle and soft in structure, and dry, that I have seen, when well protected from the saliva—the *dêbris* of the excavated teeth blown out as dry as the dust brushed from the chiseled marble. But presently the instrument strikes upon a cartilaginous bone, covering the nerve, and the same mistakes, in relation to supposed exposed nerve-tissue, and the same results of intro-dental abscess, etc., attend them. From the same chemical causes affecting the previous teeth,—"white decay," softening of the bone into a chalky paste, and "crumbling away,"—disintegration of the teeth follows.

Usually, from the age of sixteen to thirty the teeth are affected by decay in pairs—right and left corresponding teeth; often by a general devastation. In none is this destruction of the ivory glory of the mouth more afflicting, in every sense of the word, than it is to girls of diathetic delicacy budding into womanhood—in the sunshine of loveliness and womanly beauty. It is indeed a loss that in youth's fleeting hour these beautiful organs should decay and die, leaving in their place their ill-conditioned or blackened remains, or their rankling "stumps," which, like dilapidated tombstones, present the sad *dento-memento mori* of all that was graceful, beautiful, and essential to the soul of expression, standing forth as they do in bold relief, a *festering contradiction*, proclaiming an undying opprobrium upon the false assertions of those who promise to make them last forever. They may exclaim with Macbeth,—

"And be these juggling fiends no more believ'd,
That palter with us in a double sense,
That keep the word of promise to our ear
And break it to our hope."

The wisdom teeth of this group, even before they make their appearance, in a large majority are very defective in their structure. Their removal demands much care and manipulative skill to avoid fracturing the inner plate of the alveoli of the lower jaw—an injury that inflicts weeks of misery and pain.

More irregularities of the teeth and malformations of the alveolar processes occur in this than in the previous groups of teeth. The bone-structure of the sockets in an eminent degree partakes of the characteristic structure of the teeth. They appear to obey peculiar physiological dynamics bearing on inferior organized bone, either by spreading *outward* the semicircumference of the alveolar circle, as might be represented by the projecting outline of the capital letter D, or by contracting *inward* the curvilineal circle like that of a small capital c—the outward-projecting curviform alveoli and teeth giving, as Mr. Darwin has it, an "*anthropomorphous*" or simeous type of expression to the jaws and mouth, while the contracted circle of the alveoli causes the teeth to be crowded into many and various deformities. Sometimes the upper teeth, alveoli, and maxilla protrude—"overhang" far outside of the lower teeth; while in others is seen the reverse order, the lower alveoli and teeth projecting and overshutting upon the upper teeth, and in others the back molar teeth, lengthened in both jaws, meeting before the front teeth can close upon each other, leaving a space between them, so that their incisory functions are prevented, as well as causing an imperfection in the enunciation of the voice.

With the exceptions hereafter mentioned, in these teeth we first have our attention attracted to the longitudinal lines of pitted indentations in the face-enamel of the teeth. They may be observed almost in the order or character of the diathesis of each individual. First one or two pits in each of the lower centre incisors. Sometimes the upper central incisors will be pitted with one indentation; then we observe three pits in each of the four lower front teeth and two indentations in each of the superior incisors. In others we find three pits in the six lower front teeth and two pits in the six upper front teeth. In others a longitudinal line of imperfect indentations affects the whole—the two molars on either side excepted—of the lower teeth, and partially of the upper set of teeth. This peculiar malformation will be illustrated to its completion in the succeeding groups of teeth.

The dental student must not confound the occasional one or two slight indentations defacing the dense polished enamel of the first two groups as being identical with the dull, discolored, calcareous, deep pit-

tings characterizing the weak, imperfect organization of the classes of the third and fourth groups of teeth. The indentations in the first two groups are caused by accidental, temporary interruption during the period of their formation, as in the second two groups the deficiency of proper material "nutrition," or perversion of secretion, may be traced almost step by step as *causæ evidentes*, or remote causes, of constitutional derangements in the animal economy produced by certain poisonous eruptive diseases—scarlet-fever, measles, smallpox, varioloid, etc.; and, alas! in too many instances their organization being in harmony with scrofulous, strumous, cancerous, and tuberculous diatheses of the several constitutions. In fact, the calcareous formations within the pits and in the substance of the teeth may be accepted as *dento-tuberculous* formations, and are the base of disease in teeth as much as tuberculous formations in the lungs are the basis of phthisis pulmonalis.

WHAT I KNOW ABOUT CHLOROFORM.

BY W. E. DRISCOLL, BEDFORD, IND.

SOME extracts from the pen of Dr. Charles A. Lee are given in the February number of the DENTAL COSMOS (page 103), in which he very justly takes Dr. Bennett, of Edinburgh, to task for the following statement: "It should be understood, however, that the anæsthetic effect is produced by suspending consciousness, and, therefore, sensation and volition, by acting on the brain and medulla oblongata," etc.

Dr. Lee thinks such teaching "may lead to dangerous and unnecessary use of chloroform;" and further, that "if any fact is susceptible of demonstration, it is that to annul sensibility it is neither necessary to destroy consciousness nor volition, and hence not to affect the medulla oblongata at all."

To deny this last proposition is to convict one, in my judgment, of lack of practical experience. But I do know of a number of professional men who ignore it in practice; and a portion, at least, will not admit the truth of the theory. Several years ago, when first convinced that anæsthesia did not depend upon unconsciousness from the effects of chloroform, I fell into the same error that Dr. Lee commits in the following statement: "I hold that all the fatal cases from chloroform might have been prevented by following the simple method above pointed out; for it is demonstrated that death cannot happen where the article is slowly and cautiously administered, and great precaution observed."

This doctrine, if believed and carried into practice, would be more dangerous than the one he is anxious to warn us against. If true, it would rank with the greatest discoveries in medicine. But what has been the experience upon this point?

Sansom, on page 102 of his work on "Chloroform," after giving numerous cases to prove his position on this question, sums up as follows: "Thus it will be seen that a great many deaths occurred before insensibility was established, and a very few when a profound action of the anæsthetic was sustained." This effectually explodes the theory that "all the fatal cases from chloroform could have been prevented by the simple method pointed out" by Dr. Lee; and also proves his mistake to be greater than the one he starts out to correct.

Apropos to this, when my attention was first directed to the fact that anæsthesia from chloroform was not dependent upon unconsciousness, I commenced to test its efficiency in operating upon sensitive dentine. This has been my *dernier ressort* in the very worst cases ever since; from five to ten inspirations generally produced the desired effect. Its efficiency, I presume, no one will question; but as to whether it is justifiable or not, in such cases, is another thing. I have never noticed any reference to the matter in any of our periodicals; and have hesitated to mention it for fear of the consequences, if very generally adopted in practice, because of the large number of fatal cases on record where death has resulted from the first few inhalations; and should not now do so did I not feel that it would, in some degree, conserve the truth, in which lies our real safety.

A MEANS OF AVOIDING THE ADMINISTRATION OF ANÆSTHETICS FOR THE EXTRACTION OF TEETH.

BY THOS. C. STELLWAGEN, M.D., D.D.S.,

PROFESSOR OF OPERATIVE DENTISTRY AND DENTAL PATHOLOGY IN THE PHILADELPHIA DENTAL COLLEGE.

It is a popular belief that the skill of the operator is in proportion to the rapidity with which he accomplishes the extraction of teeth, but if the movements for breaking up the periostic connections are quicker than the eye can follow, or the brain can control, so as to arrest instantly, or as suddenly change the direction, failure will often result.

One of the objections to the present mode of using nitrous oxide as an anæsthetic, is the fact that often to expedite extraction the four-edged cutting forceps are employed, and large portions of the alveolar processes and gums are removed with the teeth. This mutilation has been reported to be so extensive, that there is difficulty in wearing artificial dentures upon the remains of the maxillæ. Much as this brutal practice should be reprehended, it does not concern the present attempt to show how by proceeding more slowly we may often do away with the necessity of either cutting forceps* or anæsthetics.

* Where, however, it is thought proper to use these forceps, the single-edged and double-bladed leave clean cuts that rapidly close up and do not cause this

Practitioners have no doubt often noticed how young patients will plead for a moment's respite from the agony of the first and second steps in the operation—namely, seizing and loosening the teeth.

In addition to the comfort of being allowed a few moments to recover, which heeding the entreaties of the patients admits, there is much the same benumbing of the surrounding tissues that would result from a blow. Upon the second or third application of the forceps and subsequent loosening of the teeth, there is seldom much pain. So marked is this condition, that having (some years ago) made several efforts in freeing the attachments of one of my own teeth, I would be loth to submit to any other method of operating.

This opinion has been so frequently verified in my practice with others, that it seems to be a duty to publicly call the attention of the profession to the fact, although it has, no doubt, been well known to many for a long time. In one of a number of successful cases, a child of ten years of age, who was so nervous and so readily agitated that even the propriety of using nitrous oxide was questioned, the two lower first molars were extracted at one sitting, most happily and with comparatively little shock to her system.

When it is not thought dangerous to use an anæsthetic, it is generally well to have it ready, showing the patients that the means of relieving all suffering is at hand, in this way supporting the moral courage as the reserve of an army does the front. Then securing a thorough understanding with the patients, that the design is merely to loosen the teeth and thus place them in condition for extraction, a prearranged sign may be agreed upon, by which the patients will signify their desire for a respite. The knowledge that they are masters of the situation will beget confidence, and make it possible to proceed in this way by degrees, until, in a majority of cases, their consent is obtained for the entire removal of the teeth.

In conclusion, it may be stated, as self-evident to any one who will without prejudice study the matter, that the practice of the day, in resorting to anæsthetics as a necessary preparation for all operations, is most prejudicial; it is answerable for the reckless proceedings which, in so many instances, have resulted in the sacrifice of human life. Although among those who hail anæsthesia as one of GOD's greatest boons to suffering mortals, while our hearts thrill with pride at the thought of the dental profession having been His chosen medium for imparting that gift, it is impossible to avoid regrets that many so-called dentists have to answer for the numerous cases of nervous prostration and death from its abuse. Has not the time arrived for the

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deformity. Indeed, they often seem to be less severe than the ordinary forceps, as they do not crush the bone. See DENTAL COSMOS for September, 1869, p. 461.

pretenders who ignorantly dabble with these thunderbolts of science, to be solemnly warned by the profession, and an endeavor made to prick the consciences of those who hourly risk life for the most simple operations? Cannot they be stirred to an appreciation of the enormity of the crime they commit?

INTERGLOBULAR SPACES—MICROSCOPIC APPEARANCES.

BY S. P. CUTLER, M.D., D.D.S.,

PROFESSOR OF CHEMISTRY, ETC. IN NEW ORLEANS DENTAL COLLEGE.

I HAD formerly entertained the idea that no such spaces actually existed in normal dentine, notwithstanding the high authority in their behalf. Whether or not these appearances are actually spaces does not matter much.

I now have to record a well-marked case that came under my observation but a short time since, which stands out in most perfect and bold relief, without any coloring or artificial treatment. It was that of a lower left six-year molar of a young man about twenty-six years old, with furrowed enamel of the twelve front teeth strongly marked; all the balance of the teeth sound except one, which had to be extracted,—a back molar. This I supposed to be a case of hereditary syphilis, from the appearance of the young man in general,—the membrane of the mouth, and the peculiar fetor of his breath, all going to confirm this view. The tooth mentioned I extracted, in consequence of its being crowded outward very much by the second bicuspid, which, in turn, was crowded inward. I decided on the extraction of the molar on account of its imperfect development, it being much smaller than usual, and very much out of place, and crowded. It was difficult of removal, owing to its crowded condition, exostosed fangs, and wide bifurcation.

Descriptive Anatomy.—The tooth was almost entirely devoid of enamel, there being a small amount at one or two points only; the surface rather rough, only where smoothed by mastication; yellowish in appearance; every way sound, and apparently healthy.

In this case the enamel's basement membrane had failed to develop enamel from some systemic cause, which I supposed to be depending on the cause above named.

Microscopic Pathological Anatomy.—A section through the centre of one of the fangs and crown, across the widest diameter of fang, gave the following appearances under the instrument:

Portions of the crown gave the usual tubular appearances, other portions abnormal. The pulp canal had narrowed to some extent, giving the usual appearances of secondary dentine, which extended down the fang.

Near the surface of the crown portion, within the angles formed by

grinding surfaces and parietes, the interglobular spaces, so called, stood out in bold relief; some portions having an oily appearance, not much darker than the normal dentine, the tubes apparently passing through regularly to their destination.

These oily-appearing spots connected with black or impervious spots or figures, to light being more extensive than the oily-looking spots, extend some distance, averaging about the same distance from the surface, or at some places still farther inward.

These fantastic figures or spaces, if such they are, are very similar to the cases given in "Tomes' Dental Surgery," pages 44 and 88, taken from a strumous subject. They may, like all other similar cases, be caused by inherited syphilis, which is believed to be the cause of scrofula by many able writers, with great probability of truth.

These figures resemble in appearance a flock of wild geese flying, and all I have seen under the instrument, prepared by others, and the drawings I have seen, occupy about the same positions of the crown, which are in the regions just within the coronal or dichotomal branchings.

I was not at first certain that the black figures were not stains from the hone; in consequence, I unmounted the specimen and cleaned thoroughly with alcohol, then applied the stone again on both sides, and cleansed thoroughly with alcohol, and remounted, with precisely the same results, which satisfied me of their genuineness.

I have not been fully able to determine whether or not there are any spaces at all. One thing is certain, the dentine occupied by these figures is abnormal, and in a different condition from the balance of the specimen.

Whether or not there is a different arrangement of molecules of lime-salts in these regions, or in the cartilaginous structure, or both, I am unable to say; there is evidently some abnormal condition during the formation. Why certain figures are observed is equally inexplicable.

RESTORING THE CONTOUR OF FRACTURED INCISORS.

BY CHAS. J. ESSIG, D.D.S., PHILADELPHIA.

THE following operation was performed upon a right central incisor tooth, and proves in every respect so satisfactory that I think a brief description may be of some interest to the profession.

The patient, a student of the Philadelphia Dental College, had the misfortune ten years ago to break off, by a fall, about two-thirds of his right central incisor.

He applied to me some weeks since, and desired to know what could be done to restore the tooth to something like a normal appearance.

The idea of restoring its shape by what is known as "contour filling"

was abandoned as soon as thought of, as was also that of the usual method of pivoting, for the following reasons: First, we would be obliged to cut away, and consequently lose, the substantial body of the tooth, with its enamel covering, and depend upon the frailer portion, the root. Secondly, the difficulty of matching in general appearance the adjoining teeth, they being somewhat peculiar. And lastly, the knowledge that the period of usefulness of pivoted teeth is, under the most favorable circumstances, a short one. So, as neither of these methods afforded the two important desiderata of permanency and natural appearance, I decided to splice the broken tooth with a piece of porcelain. This was done, and the contour perfectly restored.

The method of proceeding was as follows: the vitality of the tooth had been destroyed by the accident, and some years after the pulp canal had been filled with gold. The fractured portion presented an uneven edge and surface, which extended diagonally inward and upward toward the adjoining central. The first step was to remove the irregularities and obtain a perfect edge and a level surface, by means of a flat file. I then drilled up, following the pulp canal, to the depth of one-quarter of an inch, with a No. 16 drill of Palmer's set, following and slightly enlarging with a flat burr-drill. A small square gold box was next constructed,* placed in the canal, and the four sides carefully and firmly filled around with gold. Into this box a pin made of platina gold fits accurately, the pin being split fully two-thirds of its length. At this point an impression was obtained of the broken tooth and the adjoining central and lateral ones. The pin, which had been left long enough to project three-sixteenths of an inch from the box, indicated in the impression the inclination of the canal.

A cross-pin plain plate-tooth was next selected to exactly match in color the natural one; it was ground away equally from the cutting edge and neck, so as to leave the pins as nearly as possible in the centre of the porcelain; it was then fitted accurately to the tooth, and the cutting edge ground to imitate that of the adjoining central.

The piece was at this point found to nearly cover the mouth of the box, being almost as thick as the tooth itself. This difficulty was readily obviated by cutting off all that projected of the gold pivot and upon its end soldering a small plate, which fitted accurately upon the plane mentioned above as having been leveled with the file. A gold backing was then fastened upon the piece, and a slight concavity ground in the porcelain to receive the little plate. Before, however, finally soldering the piece to this plate, it was temporarily fastened with cement and tried in the mouth, as the plaster cast is liable to undergo some change

* This box and square pin have been used by several members of the profession in this city for setting pivoted teeth for more than five years.

in handling. It was then removed, after some little extra adjustment, invested in sand and plaster, and the backing and plate united by solder.

The piece can be removed and replaced with every facility, and the flat surface cleansed and polished whenever deemed necessary.

When in position, the line of union is almost imperceptible, and is really not observed unless attention is specially directed to it, and a very close examination made.

It has now been worn and thoroughly tested for several weeks, and its appearance is unchanged.

PORTE-POLISHERS.

BY A. J. REDERICK, D.D.S., SIOUX CITY, IOWA.

Of these instruments, various kinds are found in the market possessing more or less merit for the purposes designed, but all having serious objections. The bulk weight, sliding-ring, and the placing of the point at any desired angle, not possible in any but the "universal" porte-polisher, are some of the drawbacks.

In polishing, or cutting down a filling on the *buccal* surface of a molar, the sliding-ring is certainly in the way of the angle of the mouth and lips. The universal porte-polisher, so much in use, has the advantage over others of giving the point any angle desired, but the force required to retain the point in position often crushes it, besides being too clumsy, and having the sliding-ring.

Others, with grooves to overcome this objection, are at fault in a very important particular,—the stone is kept in one position, either in line with the shaft of the instrument, or some angle, and cannot be changed.

If it is found necessary to vary this by the position of the filling, an other instrument at an angle to suit the case is required, so that any change calls for one more instrument. By some, three instruments are considered a set amply sufficient to meet all cases. This gives the points (which are all alike) three positions, which practice demonstrates to be inadequate. The points of a polisher should be as varied, to reach all parts of a filling, as an excavator or plugger. The margins, especially, should be very smooth : this prevents the retention of particles of food that otherwise would accumulate on a roughened surface, and through fermentation generate an acid eager to form a copartnership with a substance unlike itself—an alkali being its favorite; and of such lime-salts the dentine is composed; a union is formed and disintegration of tooth substance around the filling takes place, so that the very conditions we sought to prevent and arrest are reproduced. Perfect filling around the margins of a cavity, a good wall, and thorough polishing, are

conditions absolutely essential for the arrest of caries. Hence, let us have points adapted to each filling we insert. The point that will wear down and polish the large grinding surface filling of a molar is ill adapted to a V-shaped approximal or the linear fillings in depressed fissures. If we were to have as many instruments or porte-polishers as the nature of cavities or their positions demanded, the number would be too great. An instrument with a ball-and-socket joint would be an improvement, as the angle could be varied at pleasure and the ball in the socket held in place by a set screw running through the shaft of the instrument, or by a racket and spring we may obtain the same conditions. I have one of the ball and socket that I made some time since, and thought it would be just the thing, but like its fellows it is too heavy and clumsy.

The appliance that has all the advantages and none of the faults of these instruments in general (in my opinion), is simply a piece of hickory, ebony, or any kind of wood worked into a handle (to suit the fancy of the operator) and brought to a point, notched or roughened, and tipped with corundum. Any broken piece of stone or slab will answer the purpose by heating gently over a spirit-lamp, and by dipping the finger into water (to prevent sticking) it can be manipulated as readily as wax.

The instrument is now ready. If you have a large filling on the grinding surface of a molar, beat your point and make it somewhat blunt. If a fissure filling, make it knife-shaped, wedge-shaped, or pointed; this can be done at the chair. The kind of filling and its position will suggest the point its shape and angle should possess. All this can be done in much less time than it takes to write it. When the corundum is worn down, additions can be made.

Some may object to this instrument on the ground that porte-polishers are made to carry Arkansas, Scotch, or other stones; but you may do that with this, by simply notching such stones and imbedding them in the corundum point; and this also can be bent at any angle. A very handy instrument can be made by having both ends pointed, one armed with corundum, the other with Scotch stone.

ROOT EXTRACTION.

BY W. C. HEAD, D.D.S., PHILADELPHIA.

The objection is made to the use of the screw forceps, that the root sought to be extracted is often split by the screw before enough of its threads are imbedded to assist in the extraction. By proceeding in the following manner, this splitting may be avoided: enlarge the pulp cavity with a drill of the same taper as the forceps screw; after which

one or two turns of the forceps will imbed the screws to the depth of the drill-hole. If the dentine is very hard, a tap screw may be used to cut a thread in the root before applying the screw forceps.

A few words in behalf of the much-abused turnkey, which few dentists now use. When a broken molar or bicuspid tooth presents, one edge below and the other at or above the edge of the alveolus, how can it be extracted in the easiest manner? If the forceps are used, they must be forced under the gum, and a piece of the process taken away with the tooth, which is too firmly seated to be removed by either punch or hook elevators.

By a proper application of the turnkey, the tooth can, in most cases, be lifted and loosened without bruising or lacerating the gum or shattering the process. The fulcrum of the key should be wrapped with cotton lampwick to such thickness that, when its centre is opposite, and pressed firmly against, the margin of the gum, the hook can just be *forced* over the projecting edge of the broken tooth. If more room be allowed, the hook, instead of lifting, will be dragged across the tooth. When loosened, the tooth is easily removed with forceps or the finger and thumb.

DIAGNOSING VERSUS GUESSING.

BY W. E. DRISCOLL, BEDFORD, IND.

In a very interesting article in the February number of the Dental Cosmos, entitled "Difficult Case to Diagnose," the writer closes with the inquiry: "Why was this sensation on applying cold to the approximal surfaces where there was no exposure? Why was there no sensation on its application to the crown?"

Having lost a molar tooth from my own mouth some years ago, under circumstances substantially the same, I have since observed that where there was no opening or metallic conductor through the crown to the seat of sensibility in the tooth, that the readiest approach of heat or cold was at the free edge of the gum.

In the above quoted case, the cotton prevented the tin filling from conveying to the inflamed pulp the sudden changes of temperature which readily permeated the more highly vitalized portion of the edge of the gum.

In the light of such experience, it is *not* a difficult case to diagnose. But, without giving due consideration to the above stated facts, it would not only be difficult, but seemingly impossible, to diagnose; unless that means guessing.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA STATE DENTAL ASSOCIATION.

The third annual meeting of the State Dental Association of Pennsylvania will be held at Gettysburg, commencing on Tuesday, June 13, 1871.

All necessary arrangements for the comfort and accommodation of the members are being made by the Executive Committee.

A full and complete programme of the order of business will be arranged by the committee, and if procured in time will be sent out with the notices.

Secretaries of local societies are requested to send the names and addresses of the newly-appointed delegates to the undersigned, so as to enable him to notify them in due time.

Arrangements are being made with all the railroads in the State for excursion tickets. Orders for these tickets can be secured by those wishing to attend the meeting, by applying to the undersigned on or before the 10th of June.

Members of the dental profession, whether delegates or not, either in Pennsylvania or adjacent States, are cordially invited to be present.

S. Welchens, D.D.S., *Corresponding Secretary.*

ILLINOIS STATE DENTAL SOCIETY.

The seventh annual meeting of the Illinois State Dental Society will be held at Galesburg, on the second Tuesday (9th) of May, 1871, commencing at ten o'clock A.M.

The committee would urge upon all dentists the importance of being present, if possible, as it is a duty they owe themselves, the public, and their profession; and, as a pleasant and profitable session is anticipated, they would also suggest to dentists who are willing to take a part in the clinical operations, that they come prepared with their own instruments.

Dentists from neighboring States are cordially invited to meet with this society and take part in its discussions. Dentists attending the meeting will be returned over C., B. and Q. R. R. for one-fifth the regular fare. Hotel accommodations will be furnished at reduced rates.

E. C. Stone, Galesburg,
E. F. Davis, Galesburg,
S. C. Wilson, Bloomington,
G. S. Miles, Jerseyville,
S. L. Edwards, Griggsville,
Executive Com.

CALIFORNIA STATE DENTAL ASSOCIATION.

The second annual session of this association will be held in San Francisco on the first Tuesday of June, 1871, at ten o'clock A.M.

Invitation has been extended to every member of the profession on the Pacific coast to be with us, and we expect a very large attendance. Our proceedings will be creditable and beneficial to ourselves and the profession generally. In the language of our President, we expect to make our association "what it should be—a *bond* that shall unite the profession in friendship, a spur to the indolent, a beacon-star to the studious, a crown to the good and true, but a whip of scorpions to the undeserving."

We shall consider the expediency of establishing a dental college and the publication of a dental periodical on this coast, said subjects having been referred to appropriate committees at our last session.

H. J. PLOMTEAUX, *Recording Secretary.*

WABASH VALLEY DENTAL ASSOCIATION.

The seventh annual meeting of this association was held in the City of Lafayette, Indiana, commencing Tuesday, March 21, 1871.

The following subjects were presented for discussion: 1st. "Filling Teeth with Heavy and Light Mallet." 2d. "Materials for Filling Teeth." 3d. "Expediency of Building up Cutting Surfaces of Incisors, when worn away by Mastication." 4th. "Treatment of the Soft Tissues of the Mouth." 5th. "Filling Approximal Cavities in Bicuspids."

A larger and far more intelligent number than usual were in attendance. The animated discussion of the various and important subjects presented gave unmistakable evidence of the great advancement the dental profession are making in the Valley of the Wabash. Among the distinguished members from abroad were Prof. Henry S. Chase, of St. Louis, Dr. C. Palmer, of Warren, Ohio, and Dr. Will Taft, of Cincinnati. Too much cannot be said in praise of these gentlemen, who are giving so much to the establishment of great reforms in dental practice.

The first subject brought out an expression almost unanimous for the heavy mallet in filling teeth. In the discussion of the second subject, all members gave gold the preference, of course, yet the different preparations were discussed.

Dr. Palmer uses gold, tin, Hill's stopping, oxychloride of zinc—*nothing else;* tin always for children. For contour fillings and others, when mallet pressure is employed, uses No. 4 adhesive gold, heating every pellet. Makes no mixture of numbers, yet no objection to heavy foil for finishing. Employs soft foil for hand pressure.

Dr. Hunt uses from No. 4 to No. 60 soft foil—principally No. 6. Gave his opinion adversely to Pack's preparation of gold.

Prof. Chase uses gold foil, No. 4 to No. 6 adhesive, No. 4 to No. 8 soft; for building up, 20 to 60; uses cylinders in the starting of fillings; recommends tin in place of amalgam in all approximal cavities. Thinks the amalgams of the present time not as good as the old-fashioned make.

Prof. Moore thinks cement plombe comes next to gold for filling—far superior to oxychloride of zinc. After six months' use, he finds its surface unworn and having a good polish.

The third subject being presented, was accepted in the affirmative, and interesting and elaborate cases described by prominent members.

The other subjects for discussion were here dispensed with, and Dr. Palmer invited to occupy the afternoon in the exhibition of his charts, casts, and diagrams. As most of our profession are aware, they are the work of his own hands, and are indorsed as the nearest approach to perfection ever presented. Societies that are fortunate enough to secure the attendance of Dr. Palmer, with his lectures and illustrations, may well feel that they meet for the greatest good that can be bestowed upon them.

Prof. Chase, of St. Louis, performed a protracted and difficult clinical operation that was much admired by all who witnessed it.

At the solicitation of Prof. Moore, Dr. Palmer remained at the office of Drs. Moore and Burt one day after the adjournment, where he demonstrated by an operation his perfect system of filling teeth to a few that remained to witness.

The association next meets in Fort Wayne, on the third Tuesday in March, 1872.

SENECA B. BROWN, *Secretary.*

SUSQUEHANNA DENTAL ASSOCIATION.

THE next annual meeting of the Susquehanna Dental Association will be held at Wyoming Valley Hotel, Wilkesbarre, Pa., beginning Wednesday, May 10th, 1871, at 10 o'clock A.M., and to continue two days.

Essays will be read by Drs. C. B. Wagner, J. E. Valentine, and C. S. Beck. The stated subject for discussion is "Filling Lateral Cavities." Dr. C. S. Beck will demonstrate the subject, and fill such a cavity, in the presence of the association.

All the sessions are open to the public.

J. M. BARRETT, *Secretary.* J. D. WINGATE, *Pres't.*

MERRIMACK VALLEY DENTAL ASSOCIATION.

THE semi-annual meeting of the Merrimack Valley Dental Association will be held in the Common Council Room, Manchester, N. H., on Thursday and Friday, May 4th and 5th, commencing at ten o'clock A.M. on Thursday.

Essayists: Dr. J. H. Kidder, of Lawrence; Dr. L. D. Shepard, of Boston. Volunteer essays may be expected from other members. Subjects for discussion: "Preservation of Deciduous Teeth," "Anæsthetics," "Mechanical Dentistry."

Clinical instruction will be given during the session by Dr. I. A. Salmon, of Boston, Dr. C. G. Davis, of New Bedford, and Dr. G. A. Gerry, of Lowell.

Members of the profession generally are invited to be present and unite with the association.

A. M. DUDLEY, *Recording Secretary.*

BOSTON DENTAL COLLEGE.

THE commencement exercises of the Boston Dental College took place on Thursday evening, March 9, 1871, at the rooms of the institution, No. 5 Hamilton Place, Boston, Mass.

The valedictory was delivered by Darius F. Drake, of Boston; and addresses were made by Prof. W. H. Atkinson and Drs. Wetherbee and Shepard.

The degree of Doctor of Dental Surgery was conferred upon the following members of the graduating class, by Prof. D. S. Dickerman, D.D.S., M.D., President of the College:

NAME.	RESIDENCE.	THESIS.
Darius F. Drake	Boston, Mass.	Digestion.
John Q. Dickerman	Taunton, Mass.	Mechanical Dentistry.
Charles N. Pierce	Portland, Me.	Nutrition.
Alonzo H. Sylvester	Boston, Mass.	Sensitive Dentine.
David G. Williams	Boston, Mass.	Extracting Teeth.
Fred. A. Locke	Portland, Me.	Operative Dentistry.

NORTHERN OHIO DENTAL ASSOCIATION.

THE annual meeting of the Northern Ohio Dental Association will be held at Put-in-Bay, on the first Tuesday, being the second day of May, 1871, at ten o'clock A.M. J. E. ROBINSON, *President.*

W. P. HORTON, *Corresponding Secretary.*

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held April 3, 1871, the following officers were elected for the ensuing year:

President.—Dr. George H. Cushing.

First Vice-President.—Dr. M. S. Dean.

Second Vice-President.—Dr. J. N. Crouse.

Recording and Corresponding Secretary.—Dr. E. D. Swain.

Treasurer.—Dr. William Albaugh.

Librarian.—Dr. J. S. Marsh.

Executive Committee.—Drs. M. S. Dean, C. R. E. Koch, and J. N. Crouse.

E. D. Swain, *Secretary.*

CLINICAL REPORTS.

CLINIC OF DR. J. E. GARRETSON, UNIVERSITY OF PENNSYLVANIA.

REPORTED BY DE FOREST WILLARD, M.D.

Cheiloplasty.

Gentlemen:—The case now before you has been sent a long distance to our clinic, even from beyond the Mississippi, and it will be our province to-day to devise some method for relief.

Many years ago this man was the victim of that fell disease, syphilis, and, worse than this, was treated (in accordance with the then prevailing ideas) with excessive and continued doses of that dangerous drug, mercury, until, at last, his constitutional force, though normally of medium strength, could withstand the two poisons no longer, and unhealthy ulceration occurred, destroying, before it ceased its ravages, not only a part of the hard and soft palates, septum nasi, turbinated bones, etc., but also a large portion of the soft tissues of the cheeks, lips, and even neck.

The cicatrices of these extensive sloughs you will see upon many portions of his face; but what renders the case more pitiable and uncomfortable, is the condition of the oral cavity, owing to the loss of the lower lip, and the consequent open condition of the vestibule, permitting the constant escape of saliva upon his bosom, and exposing the entire teeth and gums, thus causing a hideous deformity.

Not only is there loss of substance, but the mouth as well as the face is distorted by the contraction of the cicatrices, so that prehension and mastication are performed with difficulty, especially as additional trouble is occasioned by the loss of the hard and soft palates. Now, at first view, it would seem almost impossible to benefit this man, for it is evident that nothing less than a plastic operation would be of any ser-

vice, and the immense cicatrization would seem to preclude such an attempt, yet I have hopes that we shall be able to obtain suitable tissue for such an operation, if we are careful in the selection of our flaps.

Plastic surgery, gentlemen, opens to you a field for the exercise of great ingenuity, and the display of all your mechanical and artistic powers. You can follow no fixed rules, but must work upon general principles, studying each indication to be fulfilled, and each method which proposes itself for the accomplishment of such purpose. You must remember that new tissue is to be substituted for that which is lost, and that it must be transplanted and made to live in its new situation, a procedure which will necessarily require healthy material as the first element of success. Moreover, this new tissue must come from parts adjacent to the injured portion, or from a member, as the arm, which can be placed in association with such part; you must give the flap a good base of supply, looking toward some large artery; you must make it of sufficient size to more than cover the part, in order that there may be no stretching, and also to allow for contraction; you must make it of such shape that it can be adapted to its new position; and, lastly, you must properly adjust and fasten it in such a manner that the natural condition of the parts will be as nearly as possible attained. You must also be extremely careful that a healthy, fresh surface shall be obtained at the old seat of disfigurement, in order that union may readily occur.

Such are the principles upon which you are to work, and having given you these, I have really said all that I can tell you: the rest must depend upon yourselves. Of course, you will be benefited by a study of all the illustrations and suggestions which have been made upon this subject, but you will soon find that no two cases are precisely alike, and each will require a method of your own devisement. It may also be well for you to remember that the final desired result may not be possible at one operation, but must be accomplished by progressive steps. Before commencing any such operation, the whole plan of procedure, with its successive steps, must be thoroughly decided upon and fixed in your mind; for, if this precaution be neglected, you may commit some irreparable mistake in the midst of its performance. First of all should be the mapping out, upon the face, the lines of incision, either in ink, or better, by a nitrate of silver point, always allowing for about one-third contraction of the skin. Much ingenuity will be required to form this flap of such shape that it can be turned and fitted to fulfill its new requirements.

Now, in rhinoplasty, or the formation of a new nose, the flap is usually taken from the forehead and turned down to cover the missing organ, or more rarely from the arm—the Taliacotian operation—this member being held in position by appropriate apparatus until union is

complete, when the pedicle is separated and the nose nourished from its new source of supply. In operations upon the lips, however, the structures about the lower part of the face and upon the neck are so freely movable, that we can usually take our flap from the immediate neighborhood, following in a general manner, as far as practicable, Dieffenbach's principle of turning the mucous membrane over upon the skin to form the border of the new lip. In the present instance, I think we can obtain our flap from this tissue upon the side of the jaws. You will see the cicatricial tissue upon the cheeks, lips, nose, and neck, but the vitality seems still to be sufficient to warrant a prospect of cure, especially as the patient's health (a circumstance which should never be overlooked) is good, and the sloughing process was arrested many months ago. You notice how entirely the lower lip is absent; how the teeth project in their bareness; how all the parts are densely contracted and bound down to the maxilla, and how the right oral angle is pulled aside by the contraction. Now, can we fill all this vacancy? I think so, for the parts in this region are quite movable. How shall we do it? Do just as I told you a few moments since: sit down and study the requirements,—map out the normal lips in your mind's eye, and make accurate calculations as to the size and shape of the tissue needed to replace the lost portion.

We could take a flap from the neck and bring it up into this position, but I think there is a still better way. I take this pen and mark upon the face the lines for our incisions. One will commence at the middle of the deformed lip; will run downward and outward to the point on the chin where the base is directed backward, then along the base nearly to the ascending ramus; the other will exactly correspond upon the opposite side. Now, when we make these incisions down to the bone and dissect the flaps *freely* up throughout their whole extent from the maxilla, do you not see that they can easily be carried upward and forward to be united at the normal median position of the lower lip, thus covering in the lower teeth and giving a good lip, provided we can compel them to unite properly? The triangular promontory remaining between these incisions will assist in filling this space, and the only places which will be denuded will be upon the sides of the jaws, in a position where granulations will soon spring up and leave but little deformity.

I said that we would cut down upon the bone as far back as the angle; but should we do this, the facial artery would necessarily be severed, a circumstance which would be dangerous to the vitality of our flaps in their cicatricial condition. We shall, therefore, cut through the superficial structures down *upon* the artery, but not through it, which we can do if we are careful of every stroke. Should it be accidentally injured, of course it could be tied, but it behooves us to use extreme care, since the life-giving principle to our flaps must come through this chan-

nel, thence through the inferior labial branches chiefly, as the inferior coronaries are undoubtedly largely destroyed by the sloughing action. We may have some difficulty with the saliva, but a supine position will obviate much of this annoyance. You will see that the right oral angle is drawn aside and downward to such a degree that an additional cut will be necessary to bring this angle into its proper normal position. It must be drawn upward, or "taken in," which will necessitate the removal of a triangular piece from the upper lip, and the apposition of the cut edges. This, then, we shall do, at the same time making but one operation of the whole. I again review the case, observing it from various positions, but can suggest no better mechanical means for its relief; in fact, I think those proposed will be all-sufficient.

Having made our flaps, an accurate adjustment is necessary, and this we shall accomplish by the use of common harelip pins and sutures, taking especial care that the pin at the border of the new lip shall be inserted with particular nicety. Adhesive strips will be added to lend their support, and the dressing will consist of warm or cold water, according to the arising symptoms or accidents.

Liquid food and absolute rest will be essential for several days, and particular attention must be paid to keeping the parts free from saliva.

This operation will, I am sure, be more applicable than that of Lallemand, in which the flap is taken from the front of the neck, or of Chopart, in which vertical cuts are made down from the angles of the mouth, and the flap slipped up after a free dissection from the bone, since cicatrization is likely to produce evulsion in either method, while here the central triangular promontory will do much to prevent the production of such a deformity, and render contraction much less in amount.

This process of subsequent contraction is the great obstacle to the successful treatment of all deformities arising from destruction of tissue, either when occasioned by salivation, burns, or any other cause, the disposition of this *tissu inodulaire* being ever to condensation, thus reproducing the abnormal condition.

The subject of transplantation of structure has recently received fresh impetus from the experiments now being tried, and the cases reported in journals, both in our own country and upon the other side of the Atlantic, in relation to the growth of an island of fresh skin placed upon the surface of ulcers without a pedicle, being obliged to obtain its nourishment directly from the part itself. Its general utility and applicability is still under advisement. Now, it may seem strange to you that blood-vessels (for without these life and nutrition cannot exist) should so quickly form, and it is true that the whole method of formation of these vessels, in new tissue, is simply wonderful—indeed, being but an instance of a law wider than the grasp of science,—a law that expresses the Creator's will for the recovery of all lost perfection. To establish

nutrition, vessels must very quickly of course pass across the chasm, and their formation is not perhaps better understood than as an *outgrowth* or development from the vessels already formed, in the manner suggested by Billroth ("Untersuchungen über die Entwicklung der Blutgefässe," Berlin, 1856). At some point in an already existing vessel the wall dilates, a pouch is formed, it deepens and a blood canal results; while at another point, a short distance from the first, a similar action is going on: one diverticulum arches backward, the other extends toward it, each taking its course in the direction of the new material to be nourished and formed; they extend, meet, the intervening walls are removed, and a perfect arch is formed, through which the blood freely courses. Thus, at every point, these little offshoots unite with similar ones from the same or adjoining vessels, until multitudes of little arches and mutual anastomoses are formed and nutrition accomplished, all with precision, regularity, and dispatch.

Thus marvelous are the actions which are constantly taking place in our bodies to subserve the process of repair, and although the capacity of man for reproduction of large losses of tissue is infinitely less than in lower beings, yet in all there is the same wonderful reparative power. As we descend the scale to creatures incapable of self-defense and self-preservation, this provision for the sustenance of existence becomes more marked, until, as in the Ophiuridæ, self-destruction or separation is but a common occurrence, in cases of danger, repair being so active that a short time suffices to replace any portion of the body that may be cast off.

In man, who possesses the power of reasoning and defense, such provision is of less importance, and repair exists in its least expression; still, with the advance of knowledge, we may hope to assist Nature even in this process, as exampled, for instance, in the production of bone from rescued periosteum.

Such, gentlemen, are a few of the thoughts that enter my mind as we stand before this case. Let us now act.

[The patient being etherized, the incisions were then made as above described, the flaps being first freely dissected from the bone and then slipped upward until they were easily united at the median line, at a point where the normal lower lip should be situated. The facial artery was exposed, but being carefully avoided escaped injury, a most fortunate circumstance, as was afterward proved, for when the piece came to be removed from the upper lip, in order to properly arrange the right oral angle, the pedicle to the flap upon that side was rendered somewhat scanty and narrow.

In a few moments after being properly adapted to its position by pins, it became cold and livid, placing its safety somewhat in jeopardy, and in two hours it was perfectly black. Notwithstanding the free use of hot water and hot bottles, the contained blood was apparently stag-

nant, and sloughing seemed most probable, until the expedient was adopted of free scarification and puncturing, thus artificially relieving the congestion, and causing considerable improvement in its temperature. In a few hours more the same plan was repeated with happy results, and a continuance of the same for two days, at varying intervals, placed the whole flap in excellent condition, and union progressed most favorably and rapidly.

The saliva interfered with, but did not prevent, the adhesive action, and the result has been most satisfactory, the lip being sufficient to cover the teeth and prevent the escape of saliva. Stimulants and tonics were not neglected during the treatment, and support was well maintained until union was perfect.—De F. W.]

EDITORIAL.

ERROR IN DIAGNOSIS.

An interesting case which came under my care within the past two months illustrates in a very decided manner the necessity of making a careful examination prior to forming a diagnosis. Mrs. ——, a lady residing in a neighboring city, was sent to me by some of her friends who have been under my care, to ascertain the cause of a severe pain which she had been continuously suffering for a period of six weeks. The pain extended over the left side of the face and temple down the neck, shoulder, and upper part of the arm; being periodical in its attacks, and occurring at regular intervals, commencing at two o'clock in the morning and increasing in intensity until about three o'clock, and then subsiding into a dull pain, which lasted for several hours. Six weeks before calling upon me, she had consulted a prominent dentist with the view of ascertaining whether her teeth were the cause of trouble, and was informed by him, after an apparently careful examination, that her teeth had nothing to do with it, and that if she were to have every tooth in her mouth removed the pain would still continue; the cause of trouble being deep seated in its origin, situated in the larger branches of the fifth pair of nerves. Under these circumstances she placed herself under the care of a physician, who treated her for neuralgia during the period already named

Taking up a delicate probe and examining the left superior second molar, I discovered that the pulp was exposed in the anterior approximal surface. A cavity in that surface had been imperfectly filled with amalgam, and it was in a space between the filling and the walls of the cavity that the probe passed into the pulp. Applying a small pledget of cotton saturated with creasote to the pulp, the pain caused by the probe was instantly relieved. The arsenical paste was then applied and left in for forty-eight hours, at the expiration of which time the pulp was removed without the least pain. Since then (a period of two months)

she has been entirely free from the pain which she suffered for so many weeks. That the exposed pulp and the neuralgic pain stood in the relation of cause and effect is beyond a question of doubt, and it was certainly a very unfortunate thing for the lady that she had to suffer so much pain before the cause of trouble was discovered. Every one is liable, of course, to make mistakes and form erroneous diagnosis in difficult and complicated cases, but in this instance everything was so plain and simple that it is difficult to conceive how any one could have been led so far astray as to give such an opinion. J. H. McQ.

ERRATUM.

In the list of graduates of the New Orleans Dental College, in the April number, the name John D. French should read Thomas D. French.

SELECTIONS.

OZÆNA.

BY JAMES E. GARRETSON, M.D.,
CLINICAL LECTURER ON SURGICAL DISEASES OF THE MOUTH, UNIVERSITY OF PENNSYLVANIA.

The term ozæna, like the term epulis, is a somewhat indefinite one, and is to be first considered in the width of its signification.

Ozæna is from the Greek ὄζη, signifying stench, and the term is, therefore, in reality and strict justice, applicable to any ill-smelling condition. By universal consent, however, it has been restricted in its application to foul conditions about the nares and associate parts, accompanied with offensive discharge. The study of ozæna, then, it will be seen, is the study of various conditions, and may be considered under the following heads:

1. Accumulation and degeneration of the common antral secretion.
2. Degenerated pus from tooth-abscess discharging into the antrum.
3. Ulceration of mucous membrane of the antrum.
4. Deteriorated secretions from constitutional causes.
5. Caries of the osseous walls of antrum of the nares.
6. Ulceration of the mucous membrane of the nares.
7. Caries and necrosis of the osseous boundaries of the nares.
8. Lodgment and retention of foreign bodies.

The first of these conditions is most frequently observed in connection with the ordinary cold in the head. The outlet of the antrum, it will be remembered, is by an opening about the size of a goose-quill into the middle meatus, which opening is circumscribed by mucous membrane, and which membrane, as the result of congestion, can very well occlude this outlet; the parts being in this condition, it may happen that the pent-up mucus degenerates and decomposes, so that, on the subsidence of the swelling, the escaping discharges present this offensive odor. To diagnose this character of ozæna, it is only necessary to connect it with the preceding inflammation, with the absence of specific conditions, and with the readiness with which it yields to simple treatment. Of course there would have been a preliminary feeling of the sense of congestion

on the part of the patient; he would have had, to express it most simply, a cold in the head, and this cold, with its sense of dryness and constriction, would have grown worse, until, with the appearance of the discharge, he would have experienced a sense of relief; the discharge implying the passing away of the congestion and the restoration of the normal circulation and secretion.

To cure this form of ozæna requires very little treatment,—indeed, in many cases no treatment at all. I am in the habit, when the discharge continues longer than two or three days, of directing the sniffing up the nostril of the affected side some such combination as the following:

℞.—Æth. sulp. ℥i;
Tinc. iodinii, ℥ij;
Ol. juniper. ʒi. M.

If this fails to check the discharge, I then employ such constitutional treatment as seems indicated. Patients in whom such discharge exists belong to one of two classes, the plethoric or anæmic. With the first, the treatment demanded is depletory: a dose or two of sulphate of magnesia will generally be all that is demanded; although in a few instances I have found it necessary to deplete from the veins. With the second class—and this is by far the most numerous—we have the mucous membrane of the part falling into a condition analogous to the urethritis of chronic gonorrhœa: in these cases tonics are at once to be resorted to, and the common combination of iron and quinia is perhaps about the best that can be prescribed:

R.—Tinct. ferri chl. ℥i;
Quiniæ sulph. ʒi. M.
Sig. 15 drops in water every three hours.

2. Fetid discharges depending on tooth-abscesses—abscesses which discharge into the antrum—find their cure, as a rule, immediately on the extraction of the diseased tooth. If this should not, however, prove to be the case, then injections are to be made through the tooth alveolus. Iodine is an admirable base for all such injections. My own practice would be first to control the odor with the permanganate of potash.

℞.—Potass. permang. ʒss to i;
Aquæ, ℥viij. M.
Inject *pro re nata.*

It would most likely be quite sufficient to use this injection three times a day,—after which the following should be thrown in:

℞.—Tinct. iodinii, ℥i;
Glycer. ℥i;
Acid. tannicum, ʒss;
Aquæ Cologn. ℥i;
Aquæ pura, ℥iij. M.

Or,

℞.—Tinct. capsici comp. ℥ss;
Aquæ, ℥viij. M.

Or,

℞.—Chloroform. ℥i;
Spts. æth. nit. ℥ss;
Spts. vin. ℥iv. M.

Or,

℞.—Argent. nit. grs. xxx;
Aquæ, ℥vi. M.

Indeed, any stimulant preparation may be resorted to, although I incline to believe that iodine acts the most happily.

3. Ozæna from ulceration of mucous membrane of the antrum is not, so far as my experience allows me to judge, a condition of frequent occurrence; without doubt this is the case where no specific disease, as syphilis, scrofula, or scurvy, exists, so that, meeting with such ozæna, we naturally at once revert to the constitutional condition. To discover an ulcer within the antrum is a matter for diagnosis by exclusion, and thus to discover it is not at all a difficult matter. If there are no diseased teeth or teeth roots; no nasal ulceration, no antral dropsy, no acute preliminary conditions; if the fetid matter flows most freely when the suspected antrum overlies its nasal outlet, then we will generally be right in inferring an ulcer of the antrum; but an ulcer in the antrum is not necessarily a cause of ozæna. To give this fetid odor, it must be an unhealthy ulcer, by which is meant that it tends to degenerate its granulations, rather than to organize them. An ulcer, says Mr. Cooper, may be defined to be "a granulating surface, secreting matter;" and this is certainly true of most ulcers, particularly if we replace the term secreting with the term making; for the matter given off is, I imagine, nothing but degenerated lymph-corpuscles, to which the parts lacked strength to give force of organization. A healthy ulcer may be seen in any accidental sore tending to rapid self-cure; there is here little, or perhaps no matter, for the reason that every particle of the exuded lymph of repair has in it vitality sufficient for its organization. An unhealthy ulcer, on the contrary,—and by such an ulcer we mean an adynamic one,—gives off more or less pus; it throws out its reparative lymp just as does the healthy one, but the viability of such lymph differs materially from the exudation of the former ulcer. Thus, according to the nature and character of such degeneration, we have the produced pus: ichorous, a thin, watery, acrid discharge; scrofulous, a cheesy, curdlike pus; sanious, a thin, sizy discharge; glutinous and viscid, as in sordes, etc.

Now, whether any or all these kinds of ulcers should give us the fetor of ozæna, would depend on circumstances; not the least important of which would be the state of the atmosphere, and the cleanliness preserved. Laudable pus, issuing from a healthy wound, will, in hot weather, become in a very short time quite offensive, as is, unfortunately, too freely illustrated in hospital practice. Certain ulcers are, however, in themselves offensive. Every one has had occasion to observe, at some time or other, the disgusting odor arising from the saliva of particular persons. I recall, even to this day, a certain schoolmaster, the odor of whose spittle, employed to rub sums from my slate, always made me sick. This kind of saliva, and this odorous ulcer, belong to the alkaline class of people. Give such persons acid: they always need it; I never knew an exception.

A simple ulcer of the sinus, that is, one not associated with osseous diseases, is to be treated in the twofold direction of its constitutional and local requirements. To treat an ulcer justly, calls for an understanding of the conditions on which ulcers depend; and as ulcers of various signification so frequently present themselves about the mouth and throat, it may not be a digression to make a hasty review of so enlarged and important a subject.

Ulceration is the absorption or the breaking down of some constituent part of the body. Its great cause is inflammation. Inflammation is

always preceded and excited by irritation. The term irritation is a comprehensive one, and covers every source of offense to the human body. Thus one man has an ulcer, the result of an inflammation excited and perhaps kept up by the presence of some foreign body, as, for example, a ball, a splinter of wood, a particle of dust, etc. An ulcer, says Richerand, is from a cause inherent in the economy, and differs from a wound, which is always idiopathic, in being symptomatic. A second man has an ulcer, the result of a localized inflammation, predisposed by the presence within his system of some specific taint. These ulcers, a glance would exhibit, must vary widely in their character, and even more so in the treatment demanded for their cure. Thus it is that we speak of, and think about, ulcers in the way of their signification. We have simple purulent ulcers, venereal ulcers, scrofulous ulcers, scorbutic, varicose, and cancerous ulcers; the character of each being expressed by its adjectival prefix. A simple purulent ulcer is a sore, the result of some local accident, and is, most likely, self-curing; a venereal ulcer is one excited and kept alive by the presence in the system of the venereal poison; the scrofulous, scorbutic, and cancerous alike depend on dyscrasic conditions; the varicose on certain obstructions in the venous system, etc. To secure a cure, in the first of these classes of ulcers, nothing more is necessary than to protect them from adverse influences. A varicose ulcer, to be gotten well, must be converted into a simple one by treatment directed to the trouble in the circulation; a cancerous, scorbutic, or scrofulous ulcer is only to be permanently cured by obliterating the cachexia. There is nothing obscure in the appreciation of these facts; any difficulty is in meeting the indications. Ulcers, it is true, are presented under a great variety of names; but these variations have reference alone to varieties in expression. Thus, the carious ulcer implies that the condition is dependent on the presence of dead or dying bone; a callous ulcer is one having an indurated circumference; a fungous ulcer, one where the granulations of repair are in excess; a sinuous ulcer is one constituting the orifice of a canal leading to a deeper than the manifested disease; an irritable ulcer is one that, from internal or external causes, has become tender and excited; a phagedenic ulcer is one that tends to take on gangrenous action; a sordid ulcer is one discharging a dirty-looking glutinous matter; and so on, each of the many appellations being simply an expression of some distinctive peculiarity. Now, one man, having syphilis, gets a rheumatism in his joints; another gets an ulcer on his tibia. In these two cases the important features of treatment are, however, to be precisely alike; both patients must have an antisyphilitic medication; the local applications are simply adjuncts. An ulcer simple in its character, situated over or upon some part in frequent motion, is apt to assume the irritable aspect; an ulcer the result of an idiopathic influence, if occurring on a person of weak and typhoid condition, is almost certain to assume the chronic or indolent form; an ulcer engrafted by external cause on a depraved constitution is always more or less influenced by the vice, and such vice must be considered in its treatment; and so, whatever may be the extent of the review, this wide collateral relationship keeps itself in the foreground.

To return, then, to ulcers in the antrum. We are prepared to recognize that such ulcers may be of various signification, and may, for their cure, demand a various character of treatment. So far as the odor, however, is concerned, all will benefit by the common primary treatment of cleanliness and antiseptic injections. To correct the fetor

in a chronic case, it generally becomes a necessity either to trephine through the canine fossa, or to extract one of the underlying teeth and get into the cavity through its alveolus; the latter mode is decidedly to be preferred. A plan, however, that may be tried, consists in keeping a tuft of cotton or fine sponge in the nostril, and frequently saturating it by the sniffing into it of an antiseptic. The entrance into this cavity, however, through the alveolus of a tooth is one of the simplest procedures in surgery, demanding only that the operator shall recognize the position of the cavity as influenced by the shape of the jaw. Any spear-shaped instrument will answer to make the opening; to keep it patulous, it is only necessary to introduce, after each operation or injection, a tent of cotton or sponge. As an injection, the following combination may be employed:

℞.—Acidi carbolici, gtt. xx;
Glycerin. ℥ss;
Acid. tannic. gr. v;
Aquæ, ℥vi. M.

Or,

℞.—Spts. vin. ℥i;
Creasotum, gtt. x;
Aquæ, ℥vi. M.

Or, as suggested on page 498, the permanganate of potash in the proportion of from two to ten grains to the ounce of water, as indicated.

Associated with such antiseptic treatment, and which we employ in every case of ozæna, whatever may be its origin, we connect the specific or peculiar treatment demanded by each special case,—the understanding of which treatment presupposes and necessitates the understanding of disease in general, and can conform to no special rules.

It is true that for certain diseases we have certain medicaments which we have come, perhaps unadvisedly, to consider too much in the light of specifics. Thus, in syphilis the mercurials are much depended on; so that, having an ulcer of such origin to treat, a constitutional medicine might be prescribed, as follows:

℞.—Syrup. ferri pyrophos. ℥vi;
Hydrarg. bichl. gr. iv. M.
Sig. A teaspoonful three times a day.

Or,

℞.—Hydrarg. bichl. gr. ij;
Potass. iod. ʒij;
Fld. ext. sarsaparil. ℥viij. M.
Sig. A tablespoonful three times a day.

Or,

℞.—Hydrarg. chl. mite, gr. iv;
Sacch. alb. pulv. ℥ss. M.
Divide into eight powders.
Sig. One three times a day, followed, after each eight have been taken, by a Seidlitz powder.

Mercury is to be considered as an active force, striking at the parasite of syphilis, destroying it; and while it is very well thus to kill such parasites, it is quite as well to remember that the harm of the agent employed must be constantly met and counterbalanced; this we do by keeping up and supporting the system, so that I think it will commonly be found that syphilitic ulcers require wholesome food, fresh

air, proper exercise, judicious bathing,—in short, the employment of every means that tends to the maintenance of the general health.

In the mercurial ulcer—which is far more common than the syphilitic, granting the true syphilitic to exist—the general and local use of the chlorate of potash is found to act very well. The medicine, dissolved in water, may be given in doses of ten grains, repeated four or five times a day; the injection should not be less in strength than a saturated solution. The character of a mercurial ulcer is discovered by associating the local lesion with the existing general dyscrasias.

Scrofulous ulcers are judged by the appearance of the sore, the nature of the discharge, and the existence of the disease in the patient at large. A scrofulous subject, while not always bearing the clearest general evidences of the disease, yet generally has some one or more features that will allow us to distinguish the condition. General features associated with scrofula may be enumerated as follows: the first manifestation occurs generally, not always, at the period of first dentition, the symptoms being irregular appetite, an ill-smelling, inspissated mucus, swelling of the superficial glands of the neck. Continued manifestations advance with age, presenting subcutaneous lymph effusion, particularly about the calves of the legs and the outside of the thighs; various eruptions, inflammation, and suppuration of joints, especially the hip, knee, and thumb-joints; a flaccid, enlarged condition of the tonsil glands, susceptibility to atmospheric changes, inability to endure physical fatigue, impoverishment of the blood, general asthenia. Scrofulous subjects are generally languid in their movements, and without impressibility; not always, however, for it is a well-known fact that many of the most precocious and bright persons end their effulgence in phthisis. In short, the history of scrofula is the history of phthisis; it matters little, so far as a general effect upon an individual is concerned, whether the tubercle deposits itself in the lung or in the ganglia, or diffuses itself over the system at large.

Scrofulous ulcers are always unhealthy in appearance, being covered with a dirty-yellowish aplastic matter, irregular about their edges, generally bluish or purple, more or less undermined, and discharging an ichorous, flaky pus; local stimulation meets with little or no response, and, for the reason of the general deficiency in vitality, the parts around are usually indurated from interstitial deposits, chronically congested, and looking altogether indolent and ill conditioned.

The treatment of scrofulous ulceration is (in our present knowledge of the disease) simply a treatment of building up. Unacquainted with the character and causes of the disease, we direct our aim to so lift up the life-forces that a sufficient inherent vitality may be developed to throw off or overmaster the depressing influence. Exercise, tonic medicaments, cold bathing, salt and mountain air, rare or raw meats, generous liquors, all are useful means to such an end. Iodide of potassium has long had a reputation in this disease, also barium, iodide of iron, syrup of the phosphates, cod-liver oil, phosphoric acid, etc. My own individual opinion and experience is, that wrapping one's self in a wet sheet on getting out of bed, and securing vigorous reaction by a good hand-rubbing, and, after such operation, drinking the yelk of a fresh egg drowned in good brandy or whisky, is better than any medicine proper yet prescribed. Certain I am that I have seen this treatment do such good as warrants the commendation these remarks would give it.

We always, however, do something to a local disease, if for no other

reason, from mere force of habit. We can use with these ulcers any of the applications referred to a few pages back, and any one of them is about as good as the other, or we may use them one after another.

Syphilitic ozæna from ulceration of the antral mucous membrane must be, as remarked, an exceedingly infrequent affection. Not so, however, with ulceration from such cause in the nares; such a condition is quite common. When you have a case in which dirty clotty scabs are constantly being received into the handkerchief, and much offensive sanies is discharged from the nose, you may feel well satisfied that you have a case of syphilitic ulceration, and particularly may you rest satisfied in your diagnosis if any evidences of the disease exist in other parts of the body. Syphilitic ulceration of the nose has frequently been confounded with a commencing polypus; but the conditions are so dissimilar that only the most culpable carelessness could fail to distinguish them. In the first condition there are the fetid discharge, and the association with the anterior train of accidents; a scab soon comes away, and a temporary cessation of the obstruction ensues. In the latter disease the obstruction is gradual and continuous; there are no fetid clots, and no anterior accidents of association: blowing the nose, in the one case, most likely relieves for the moment; in the second, it throws forward the polypus so that we can see and feel it.

Syphilitic ulcers within the nose attack equally any location, and possess the most unfortunate tendency to enlarge and burrow, so that, if not successfully combated, in a very short time the bony framework is involved, thus giving the deformities so common.

A patient with a syphilitic ulcer developing in his nose, complains first of a feeling of congestion. We come to our conclusions because we observe other certain secondary indications. A few days, more or less, pass, and he is troubled with a discharge; this, at first, is very little or perhaps not at all offensive. Very soon, however, he remarks the odor, and the discharge, which continues to increase, frequently becomes so profuse that twenty or thirty pocket-handkerchiefs are necessary for his daily use. Occasionally, and sometimes very frequently, dirty, gluey clots or scabs come away, and the ulcer, if seen, is noticed to present a reasonably healthy look,—something, for example, as a chancre would look when only half destroyed and casting off its slough. If uncombated and unconquered, the ulcer eats deeper and deeper, until the bone is reached, which, in its turn, succumbs, giving us caries, or, much more likely, necrosis. Arrived at this stage, we have, indeed, a most formidable condition, and it is not at all unlikely that, in defiance of every effort, more or less deformity will result.

An ulcer situated in the anterior part of the nares is indicated by the forced expirations of the patient. Situated well back, he relieves himself by forced inspirations; occasionally, however, from the very beginning the pituitary membrane becomes so thickened and engorged that the passage of air through the tube is almost shut off: in these cases the trouble is indicated by excessive restlessness.

It is not by any means always the case that nasal ostitis is secondary to ulceration; on the contrary, the cases are frequent enough where the bone becomes primarily diseased and where the ulcer is simply the associated lesion. Syphilitic ostitis very frequently ends in necrosis, and more particularly is this the case where the turbinated bones are the ones affected. The vomer, however, is the one most frequently necrosed in syphilis,—that is to say, the most frequently attacked; and

this is brought about in three ways: first, from a primary ulceration of its mucous covering; second, by the deposition of submucous tubercles; third, by the direct affection of the bone. When ostitis attacks the vomer or any other bone, our best efforts are to be directed to the resolution of the inflammation. To secure this end we resort to such local means as seem indicated by the peculiar features of the case. The treatment would be that applicable to inflammation anywhere; it could be influenced by the temperament of the patient and the stage of the disease. Locally we have nothing at this time to do with its specific character; we have simply to treat a perverted condition of the circulation of the part. Constitutionally, however, its origin is to attract our closest scrutiny; and, in connection with the local remedies employed, antivenereals must be depended upon as our strongest supports.

The diagnosis of inflammation of the nasal boundaries is not difficult to make out. When the vomer is the bone attacked, the patient suffers from sharp pains, referred to the root of the nose; he has headache, always increased by the recumbent position. If the inflammation exists in the anterior part, pressure on the cartilage increases the pain.

The nasal bones, when affected, exhibit an overlying congested skin; pressure on the bridge is responded to by much pain; the lachrymal secretions are affected, and not unfrequently, because of the congestion in the ductus ad nasum, run over the cheek. The turbinated bones, when the seat of the inflammation, yield a soreness to the lateral aspects of the canal, and respond quickly to pressure thereon exerted.

Whichever of these bones may be the one affected, its history, so far as ozæna is concerned, is the same in signification. If the inflammation is not arrested, necrosis or caries, partial or complete, results. Soon a discharge makes its appearance, disgustingly foul if the case is one of necrosis, and more or less offensive, and mixed with osseous particles, if it is caries.

Antivenereal treatment is a treatment of building up. You cannot hope to arrest syphilis when it has passed to its tertiary manifestations in any other way. Limit and circumscribe the local inflammation as much as you can; and to do this you will generally find that stimulants act a better part than depressants. An excellent injection is combination of iron, iodine, quinine, and glycerin:

℞.—Tinct. ferri chl. ʒi;
Quiniæ sulph. gr. xxv;
Tinct. iodinii,
Glycer. āā ℥i;
Aquæ, ℥iv. M.

Sig. Inject, or brush over and about the parts, three times a day.

Give iron and quinia internally. It is scarcely probable that a patient having syphilitic necrosis needs a mecurial course; indeed, it is much more likely that he has already been so over-drugged with this medicine that his trouble is mercurio-syphilitic, rather than syphilitic alone. Iodide of potassium is recommended and freely prescribed in these tertiary conditions; it may be given in doses of from ten to twenty grains dissolved in water or in the fluid extract of sarsaparilla. But good rare roast beef, poultry, a daily glass of malt liquor, boat-rowing, wrestling, horseback-riding, systematic bathing, these are the reliable medicines, and may elevate the vital forces to an ability *per vias naturales* to throw off the disease. It is confessedly hard to cure syphilis when it has thus taken hold of the system; and when it inflames a bone,

particularly a small one, the patient is lucky if he escape without its complete destruction.

Necrosis, partial or complete, implies, of course, the existence of a sequestrum ; and the getting away of this dead part implies very generally the cure of the ozæna. Particularly is this the case when the death is limited to the single bone or piece. To get away this piece is then one of the most important features in the treatment. How is it to be done ? Simply wait until the probe reveals that it is loose ; if it may not be taken away through the orifice of the sinus it has itself created, we have only to enlarge in any convenient way such sinus, and then lift the piece away. If, after the removal of such dead bone, we find the discharge continuing, but modified as to character and odor, we infer the necessity for stimulation, and use the iodine, or iodine and iron, or the combination with tannin and glycerin, as seems to be indicated. It might be, however, that neither the discharge nor the odor decreased; in such cases we are seldom wrong in inferring that more dead or dying bone is in the wound, and the treatment first employed is to be renewed. When tertiary syphilis has associated with it severe nocturnal pains, great relief is frequently secured from the administration of the iodide of potassium, particularly if combined with minute doses of phosphorus,—say five drops of the acid. phosphoric. dilut. as a dose; it is to be remembered, however, that, because of the relationship of the potash with the mucous membranes, in many persons even very small doses will excite much irritability in the air-passages, thus seeming to increase instead of allaying the trouble. With such patients we must diminish the dose of the iodide *pro re nata.*

Bromide of potassium is now frequently employed to procure rest and tranquillity. It is commonly prescribed in doses of ten grains; but forty or fifty will be found the better dose. It is best given in a little water just as the patient is about to get into bed.

Lodgment and Retention of Foreign Bodies.—In the use of cotton or sponge about the nares, care is to be taken that the pellets do not escape attention and remain lodged in the passages. Some of the most offensive and resisting discharges occasionally have their cause in this direction. Rhinolites—calculi varying in size from a pea to that of a pigeon's egg—sometimes form in the canals, and, by inducing ulceration and collecting débris, become the source of ozæna. Peas, rags, buttons, and sundry other articles are not unfrequently found in the nares, thrust there by children of experimental proclivities; any of which may, of course, become a source of offense.

The removal of foreign bodies from the nares is always to be effected as speedily and with as little injury to the parts as possible. A plan that may first be tried is to place the patient in a strong light and search the parts with very delicate forceps; if the body can be seen, it may thus generally be removed. Another plan consists in giving a pinch of snuff and compressing the unobstructed nostril; the effort of sneezing will not unfrequently throw the body a considerable distance. Still another plan is to compress the unobstructed nostril and blow into the mouth, thus forcing it out. An annealed wire, bent into the form of a loop and passed over the body, is very frequently employed with satisfactory success ; a flexible, blunt, double hook is also used with advantage. The syringe is sometimes found beneficial, the obstruction being washed back into the throat.—*From Diseases and Surgery of the Mouth, Jaws, and Associate Parts.*

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Death from Chloroform.—Dr. W. W. Dawson places on record, in *The Cincinnati Lancet and Observer*, twelve unpublished cases of death, with notes, from which we extract the following of special interest:

"*Death while the Anæsthesia was but Partial, Patient in an erect Position for the Extraction of Teeth; had taken it frequently to complete Insensibility.* Reported by Dr. J. G. Wilson, Washington C. H., Ohio.

"'On September 29, 1870, Dr. Hamilton called on me to administer chloroform to Mrs. Col. Garris, who had come to his office to have eight teeth extracted. I met Col. Garris at the foot of the stairs leading to Dr. H.'s office, and he requested me not to put his wife fully under the influence; to give her only enough to allay pain. I found her sitting in the dentist's chair. I asked her if she could stand it to have her teeth extracted without being insensible? She answered: "I expect I can, but I am not afraid of chloroform; I have taken it a hundred times, and I could have taken it myself to-day, without sending for you, but they would not allow me to do so." I gave it on a napkin, held from 1½ to 2 inches from the mouth, and after inhaling the vapor two or three minutes, she said: "If the dentist is ready I am." When Dr. H. introduced the forceps she caught his hands; I removed her grasp to mine, and she held my hands firmly. When the tooth was drawn she screamed so as to be heard across the street. As Dr. H. was about to engage another tooth, she caught his hand, and said: "Hold on till I take more chloroform." Dr. H. stepped back, and I saw she was fainting. I laid her on the lounge. I could not detect either pulse or heart action. She continued to breathe at long and still longer intervals, blowing out the lips at each expiration. Her breathing reminded me of persons that I have seen die of apoplexy. Mrs. G. was thirty-nine years of age, the mother of eight or nine children, of delicate health, and very nervous. The pulse, before the administration, was eighty; under the chloroform it fell to seventy. The amount of chloroform used did not exceed one drachm. It was procured from Allen & Co., Cincinnati, O., and on being tested was found to be pure. I had used it before, and frequently since. Artificial respiration, electricity, cold water, and stimulating enema were used.'

"As supplementary to this report, I may mention some facts in reference to the chloroform history of Mrs. Garris, as given by Dr. Stewart, of Bloomingsburg, Ohio, at the Cincinnati Academy of Medicine during the present session. Dr. S. stated that he had known Mrs. G. all her life, had given her chloroform in all her labors except the last, when it was given by Dr. Wilson; that *he had kept her under its positive influence twelve hours during her first confinement.* That he had given it to her on three different occasions for the extraction of teeth, and always with the happiest effect and with the best results. He expressed the opinion that if chloroform had been pushed to complete insensibility

at its last administration, that the termination of the case would have been different.

"Upon the question of the comparative safety of partial and complete anæsthesia, the following, taken from the paper of Dr. Reeve, already referred to, is pertinent: 'Attention was first called to the probability that death, under chloroform, might be explained by the depressing effects of the surgical incisions upon the heart's action by Mr. Bickersteth, as long ago as 1853. "He relates three instances in which the pulse suddenly ceased on the first incision by the surgeon, and commenced again in a few seconds, the breathing going on naturally all the time. All the three cases were amputation of the thigh." Snow has never observed this change in the heart's action, although he says he has carefully watched for it; and he explains the cardiac irregularity by the direct effect of chloroform, its occurrence being just at the time when anæsthesia is at its height. The next investigator of this subject was M. Vigoroux, who presented his views to the Academy of Sciences. He started from the fact that a painful impression upon the sensitive nerves influences the heart by a reflex action in a manner exactly similar to a direct excitation of the par vagum, retarding or even arresting suddenly its movements. He first attempted a solution of the question, whether this influence of the external sensory nerves upon the heart's action was exerted during anæsthetic sleep, and decided it in the affirmative. As we have not access to the detail of his experiments, we cannot decide how justly this decision was made, but his further conclusions shake confidence in him entirely; they were that the influence mentioned not only exists, *but is augmented*, and that a majority of the deaths under chloroform could be attributed to this cause! M. Perrin, to whom we are chiefly indebted for a knowledge of M. Vigoroux's doctrines, disposes of these assumptions most effectually by calling attention to the number of deaths which have occurred before the operation began—35 out of 65! But M. Perrin investigated the subject for himself, and from reason and the careful examination of eight cases of operation under chloroform, concludes that it is only during the period of partial anæsthesia that this influence of external excitation upon the heart's action manifests itself, while during complete anæsthesia it is abolished. "To admit any reflex action whatever after sensibility to mechanical irritants is abolished, would be to admit an effect without a cause." Mr. Bickersteth also expresses his conviction that accident in this way is less likely to occur when the anæsthesia is profound. Mr. Lister saw a patient die when partially under the influence of chloroform, and expresses the opinion that he would have passed safely through the operation had the influence been complete. This, then, brings us to a point at which the doctrine becomes of the highest practical importance; it forces upon us the question, Is partial anæsthesia more dangerous than complete? A question beside which the mode of death, simply considered as such, becomes insignificant. In support of the affirmative, we have seen that there is considerable respectable authority.'

"In his collection of cases, in the section bearing on partial and complete anæsthesia, Dr. Reeve introduces the following one, which has a remarkable resemblance to that of Mrs. Garris: 'A lady, San Francisco (*Boston Medical Journal*, May 19th, 1864). The patient was seated in a dentist's chair, and was "much excited, by fear of the instruments. At a period when anæsthesia was manifestly incomplete

as she seized the dentist's hand and removed it from her face, the tooth was extracted; but the jaws *immediately after* became clinched, and her head thrown back," the breathing was arrested, and death rapidly ensued.'

"*Death of a Lady placed under Chloroform for the Extraction of Teeth; Position Recumbent; had taken Chloroform before.* Reported by Dr. D. C. Rathburn, Middleport, O.

"'Mrs. Black died in 1865. She was a person of nervous temperament, delicate health, but of no organic disease. Before taking chloroform she seemed agitated, pulse about 100. She had taken chloroform once before for dental purposes. Her position was recumbent, before a large open window. The chloroform was administered by folding a handkerchief in the form of a cone; saturating the apex, applied it to one nostril only. The amount used was about three drachms and a half. She never lost consciousness, but would indicate by a wave of the hand that she was ready. This she did until the last of three fangs had been removed, when, as quick as thought, a deathly pallor came over her countenance, indicating syncope or death. I immediately applied my ear over the heart. It was still. She had died without a struggle. No time was lost in drawing out the tongue, and in inflating the lungs by the application of my mouth to hers, compressing the chest after each inflation. Artificial respiration was thus kept up for one hour.' This would seem to be another death from partial anæsthesia.

"*The Manner of Death.*—This may be *sudden*, *gradual*, or *secondary*. Most deaths, as will be observed by an examination of all records, were sudden,—in a moment the patient died. Bridget Henry had a fair pulse and regular respiration up to the very instant when both ceased. In a few cases the death was *gradual;* the fatal result seems to have been delayed; the heart and lungs showed feebleness of action, then were arrested; in a moment respiration and pulsation were resumed, but only to be followed by cessation, and thus arrest and resumption of these vital functions alternated, sometimes for minutes, sometimes for hours, before the death of the patient. Dr. Wood's case peculiarly illustrates *secondary* death from chloroform. Aroused from the complete anæsthesia, the patient at once resumed the vomiting which had been inaugurated by the first inhalation of the vapor, and which terminated her life on the sixth day."

Chloral in Vivisections.—In one of his lectures (*Med. Times and Gaz.*) Dr. J. Burdon Sanderson exhibited a rabbit rendered insensible by the injection of five grains of chloral into the internal jugular vein. He says: "As a means of producing anæsthesia in animals, this substance is far superior to chloroform, partly because it interferes less with the play of the vital functions, partly because its influence is much more permanent, lasting for five or six hours without any repetition of the dose. It is the last fact specially which renders it so valuable.

"With respect to the performance of what are called vivisections, I can assure you that I have as great a horror of them as any member of the Society for the Prevention of Cruelty to Animals. The rules with respect to them are these: First, no experiment that can be performed under the influence of an anæsthetic ought to be done without it; secondly, no *painful* experiment is justifiable for the mere purpose

of illustrating a law or fact already demonstrated; thirdly, whenever, for the investigation of new truth, it is necessary to make a painful experiment, every effort should be made to insure success, in order that the suffering inflicted may not be wasted. For the question of cruelty depends, not on the absolute amount of suffering, but on its relation to the good to be attained by it. For this reason no painful experiment ought to be performed by an unskilled person, with insufficient instruments and assistance, and in places not suitable for the purpose. Even under the most favorable circumstances, it is only by the utmost care and forethought, joined to a certain amount of experience and skill, that physiological experiments can be made successful. It is in neglect of these precautions and qualifications that the real cruelty consists. To counteract it, the only effectual way is to establish physiological and pathological laboratories under proper regulations. The opponents of the legitimate use of vivisection should consider in how far their opposition may not tend to promote cruelty by compelling those who are engaged in physiological study to make their experiments in holes and corners, and without proper assistance or apparatus."

Action of Pain on Digestion and Nutrition.—From some experiments on frogs and rats, Professor Mantegazza (*Gaz. Med. Lombardia* and *Med. Times and Gaz.*) has arrived at the following conclusions:

"1. Pain disturbs the digestion in many ways—viz., by diminution of appetite, repugnance to food, various forms of gastralgia and dyspepsia, the arrest of stomachal digestion, vomiting, or diarrhœa. 2. We are able to demonstrate experimentally in animals that pain renders gastric digestion much slower, the effect being alike in batrachians and mammals. 3. In the higher animals prolonged pain produces on nutrition, as its ultimate effects, a great degree of debility and much emaciation. 4. In frogs, during winter, when alimentation cannot disturb the effects of pain, prolonged suffering induces, on the part of the animal, the absorption of a larger quantity of water, approaching to the condition of saturation in cadaveric imbibition. This absorption is in direct proportion to the loss of force by the animal and to its approach to death—the nature of the death not seeming to exert any influence on the absorption of water which takes place after its occurrence. 5. This imbibition of water is so regular that, in the frog, it may serve as a true measure for appreciating, during winter, the amount of debility and the danger to life. 6. Indirect and very grave effects of pain on the general nutrition are the establishing a greater vulnerability to all noxious causes, and affording a more propitious soil for all pathological germs, whether inherited or acquired. 7. It is probable, but not demonstrated, that pain, besides enfeebling the economy by a direct diminution of the digestive and assimilative processes, may alter the composition of the blood by pouring into it the products of a pathological digestion—true ferments of proximate or remote disease. 8. In the nerves of a limb for a long time tortured histological lesions may be found after death, which, it is highly probable, are due to the mechanical injury. 9. In the centres of the spinal marrow no sensible changes of structure have been recognized, even when the torture has been uninterruptedly continued during a month. 10. It appears that the most serious traumatic lesions are less dangerous to nutrition and to life when by means of etherization pain is prevented. 11. The disturbances of digestion and nutrition

brought on by pain are such and so numerous that it is more easy to imagine than to specify them. They traverse the entire scale, from simple anorexia to death from inanition, from vomiting to tuberculosis."

Unity of Nerve Current.—"It is not probable that there is more than one kind of nerve current or influence; and no histological difference has been discovered in nerve filaments, whether they minister to motion, sensation, or special sense. Prof. Allen taught in his lectures, twenty years since, and at a later date in a series of papers published in the *Medical Independent*, that the effect of the nervous current varied with the mechanism at the end of the nerve. If a nerve terminated in a muscle, motion was the result; if in the peculiar mechanism of a gland, secretion. If a nerve originated in the external skin, its current conveyed to the sensorium common sensation; if it started from an organ of special sense, special sensation. There has never been any proof of an *intrinsic* variety of nervous currents, and histology has not detected a variety of conducting nervous filaments."—(*Chicago Med. Journal.*)

Bichloride of Methylene versus Nitrous Oxide. By Mordaunt Stevens, House-Surgeon, Dental Hospital, Soho Square.—"Mr. C. Gaine, whilst comparing bichloride of methylene with the protoxide of nitrogen, forgets to state that bichloride is unpleasant, whilst the nitrous oxide has a pleasant taste. He might also have added that the bichloride has not proved itself safe—the gas has; and last, and certainly not least, the methylene produces nausea, and often vomiting—the nitrous oxide does not."—(*Med. Times and Gaz.*)

Metachloral.—"Dr. Richardson exhibited to the Medical Society of London a substance known among chemists as metachloral. It is a white powder, insoluble in water and alcohol. It is believed by Dr. Richardson, from experiments made on the lower animals, to possess mild narcotic properties. Metachloral is isomeric with chloral. It is produced when chloral hydrate is brought into contact with sulphuric acid. Chloral, also, may be changed into metachloral spontaneously when it is kept for a long time in a stoppered bottle, or when a quantity of water insufficient to produce the hydrate is added to it. Heat converts metachloral into the liquid chloral, which becomes the hydrate on the addition of a sufficient quantity of water. Owing to its affinity for water, chloral is a caustic, and Dr. Richardson thinks that this fact, taken together with that of its after-soothing effects, may be turned hereafter to practical value. The specimen of metachloral exhibited by Dr. Richardson was prepared by Dr. Versmann by bringing chloral hydrate in contact with sulphuric acid at 140° Fahr. By treating it with alkalies, metachloral yields a formate and chloroform."—(*Ibid.*)

"*Chloral as an Antiseptic.*—Mr. Stodart, of Bristol, has recently examined the stomach, lung, heart, kidney, and spleen of a patient who died from an overdose of chloral hydrate. 'The first thing,' he says, 'that struck me was the very extraordinary way in which the several portions were preserved. Even now, although more than a week has elapsed since death, yet not the slightest sign of decomposition has

taken place, nor any unpleasant odor. This doubtless is the effect of chloroform in the tissues.' "—(*Med. Press and Circ.*)

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"*Psoriasis following upon Artificial Local Anæsthesia.*—In the course of some experimentation on local anæsthetics, I applied a mixture of chloroform and acetic acid to two portions of my left forearm. There was not any visible change in the parts, but loss of sensibility was immediate and complete over the entire surfaces to which the solution had been applied, so that the skin could be pinched and transfixed by needles without any pain. From one of the patches (A) to which the application had been longer, a slough of the surface of the derma was thrown off after a few days; the other (B) desquamated its cuticle. On both the resultant cicatrices patches of psoriasis appeared, extending as far as the primary applications and terminating abruptly at the margins. After about a fortnight B was covered with pityriasis, and A showed several spots of psoriasis with intervening pityriasis. During this period both caused some itching. A fortnight later B was desquamating furfuraceous scales, which gradually ceased, so that in about six weeks from the experiment it was quite recovered, yielding no mark. A gradually cast off all its crusts of psoriasis and became covered with pityriasis, which ended as on B; but three months elapsed before the part was natural. No pigmentation or depigmentation occurred. Frequent microscopic examinations were made, but no parasitic organism was discovered. I was in good health at the time, but somewhat overworked (preparing for examinations), and was daily attending cases of disease in and out of the infirmary. I had never before, nor have I since, had any cutaneous disease."—(L. S. H., M.D., *Med. Times and Gaz.*)

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Syphilitic Lesions of Mouth.—Dr. Charles R. Drysdale states (*Med. Press and Circ.*), "In smokers and persons addicted to strong drinks, or fed on irritating diet, the lips, cheeks, tongue, and especially the fauces, become the seat of interminable eruptions of mucous syphilitic lesions, just as in the external genitalia of women."

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Snake Fangs—Rapid Renewal.—Dr. J. Fayrer (*Med. Times and Gaz.*) states: "The poisonous snakes, when they either shed or lose by accident their fangs, regain new ones in from a few days to a month or six weeks. An echis was refurnished with fangs, firmly anchylosed to the maxillary bone, on the third day after the removal of the former ones. If the whole mucous capsule be removed and the maxillary bone injured in extracting the fangs, the reserve teeth already developed and the germs are also destroyed, no new fangs are reproduced. This is often done by the snake-catchers, but when imperfectly, and the reserve fangs and germs are not destroyed, fatal accidents have occurred from the unexpected reappearance of fangs.

"Snakes cast their epidermis frequently; the cobra and krait once or twice in a month, but the echis I have kept for three months without its changing its skin. Snakes will live months without food or water. A daboia lived for one year without food. It moulted frequently, became very thin, but it was active and poisonous to the last."

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Neuralgia of Jaw—Operation. Clinic of Prof. W. T. Briggs; reported by W. J. Sneed, M. D.—"The case to which I direct your atten-

tion is one of neuralgia of the jaw-bone, first specifically described by Prof. Gross. He attributes the disease to compression of the branches of nerves distributed through the wasted alveolar process depending on the encroachment of osseous matter upon the walls of the canals in which they are inclosed in edentulous persons. It is most generally met with in elderly persons. It is more frequently seated in the upper than in the lower jaw. The morbid action is generally limited to the osseous structure, but not always. It can only be relieved by the removal of the affected alveolar process.

"J. D., a farmer, aged 63 years, has been suffering for a number of years with neuralgia of a most aggravating character in the left side of the face. A year ago I performed Carnochan's operation of exsecting the second branch of the fifth nerve of the left side, with great relief. You see now the marks of that operation on his cheek. Within a month, however, the neuralgia returned and located itself in the left alveolar process of the upper jaw, and since then he has suffered the most excruciating paroxysms of pain, which last a few minutes and then cease, to return again after a short interval. The paroxysms are always rendered worse by the movements of the mouth, as in talking or eating. His general health is not good, his sleep is disturbed, his appetite is bad. Medicines have had no effect in even relieving his sufferings, and he has come to us again for surgical relief.

"In examining his mouth you will observe that all the teeth on the left side have been lost, and that the alveolar process, from the lateral incisor to the second molar, is enlarged, tuberculated, and as hard, apparently, as ivory. The remedy I will use in this case is excision of the affected alveolar process. I will make an incision along its ridge from the incisor to the second molar tooth, turn aside the soft parts, and cut off the affected bone with bone forceps and gouge.

"(The operation was performed as described. The bone removed was hard and eburnated. There was but little hemorrhage, and very little suffering afterwards. On the third day the patient left the hospital, having slept two nights without interruption. He returned to his home in Sumner County, and has not been heard from since.)"—(*Nashville Jour. Med. and Surg.*)

"*Necrosis of Inferior Maxillary.*—Dr. James S. Bailey presented to the Med. Soc. of the Co. of Albany, a section of three-quarters of an inch of the inferior maxillary, which was exfoliated. The patient was a little German girl, aged five years. In September she was attacked with hooping-cough of an aggravated form, and her life was severely threatened. In December Dr. Bailey was consulted. She was much attenuated; and one inch from the symphysis, on the right side of the jaw, there was an ulcer which presented the appearance of an ulcer in the stomach; the edges were as smooth and even as if they had been cut by a punch. From this opening was discharging thin and unhealthy pus. The denuded necrosed bone was visible. Dr. Bailey insisted upon giving her a generous fluid diet, and by means of mild tonics she rapidly grew in strength and flesh. An operation was proposed for the removal of the necrosed portion, but the parents strenuously resisted. In February the father importuned Dr. B. to operate; but as nature was acting her part so nobly it was thought best to wait. Upon the 26th of February Dr. B., by means of a strong pair of forceps, removed the portions ex-

hibited from the symphysis back. It embraces the right central and lateral incisors, the canine and molar teeth. The specimen is remarkable on account of its showing upon one side a sack containing the dental pulp preparatory for the formation of a permanent tooth, and upon the other side is a well-formed permanent tooth making its way through. The doctor was unable to account for the cause of this necrosis, and was not able to give information in reference to the child's treatment previous to the consultation with himself."—(*Buffalo Med. and Surg. Jour.*)

Fracture of the Superior Maxillæ. By Samuel W. Latta, M.D., Assistant Surgeon U. S. Navy.—"S. M., white, age 33, while working on the deck of the U. S. steamer Alaska, during a gale of wind, on July 9, 1870, was struck in the face by the 'leading block of a reef-tackle.' Both superior maxillæ were separated from the superior facial bones without much displacement. The teeth, alveoli, and hard and soft palates were not displaced with reference to each other, nor was there obvious injury of the mucous membrane of those parts. The whole (teeth, alveoli, etc.) dropped down perceptibly when force was applied to any part. Slight wound of left ala of nose externally. No other flesh wound. Bleeding freely from posterior nares, both through the nose and down the throat. He soon recovered his senses after the accident.

"*Diagnosis.*—Fracture of the superior maxillæ at their union with the superior facial bones. Ordered to inject nares with cold water, rinse mouth frequently with water, to lie in semi-recumbent position, and keep both the superior maxillæ at rest. ℞. Liq. morph. sulph. ʒj at night. On July 10th his face was very much swollen; eyes closed; bleeding decreasing gradually; slept well; breathes freely through the mouth; nose plugged with clotted blood; talks with difficulty. Ordered fluid food; wash face with the following, viz.: ℞. Alcohol and water, equal parts. Morphia at night. No other treatment was adopted. Swelling gradually disappeared, bleeding ceased, and on August 15th he was discharged fit for duty. Bones not at all movable. No deformity whatever resulted from the injury.

"In this case there was undoubtedly osseous union. The great trouble in these cases, when much swelling exists, is to make a positive diagnosis. This was done in the above case by discovering the movement of the superior maxillæ."—(*Amer. Jour. Med. Sci.*)

Ranula with Fatty Contents.—"Mr. Warren Tay exhibited to the Pathological Society of London four (out of five) fatty masses removed from a ranula. They varied in size from a hazelnut to that of a walnut, were of the consistence and aspect of firm butter, and uniform throughout in section. Microscopic examination gave a negative result. Chemical examination by Dr. Tidy showed the composition to be fatty, with a little phosphate of lime, the fat being in his opinion in the condition of adipocire. The specimen was considered unique as regards any fatty contents of a ranula, and also as to the presence of adipocire in the living human body."—(*Lancet.*)

Tooth in Bronchus.—Dr. Herr presented to the New York Pathological Society (*Med. and Surg. Rep.*) "a specimen, showing the lodg-

ment of a tooth in the bronchus, which gave rise to no immediate symptoms of danger, but eventually to bronchitis, pneumonia, and death. The tooth passed into the larynx after vomiting. The emesis was caused by ether used for an operation on the jaw."

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Glossitis, Acute.—"Mr. H. G. Croly said it would be in the recollection of the Society (Proc. Surgical Soc. of Ireland, *Medical Press and Circular*) that he communicated, during one of the past sessions, the histories of nine cases of acute inflammation of the tongue, which he believed had arisen idiopathically. During the month of January he met with another case of acute inflammation of the tongue, the history of which he would lay before the society.

"Michael M., aged thirty-six years, employed as a boatman by the Barrow Navigation Company, presented himself at the Meath Street Dispensary, on the 14th of January, 1871. His appearance was characteristic of the affection from which he suffered. His countenance was anxious, the tongue protruded between the teeth, his speech was thick, or what might be termed the glossitic speech; his breathing was distressed. On inquiry, he ascertained that the man had got a severe wetting some days previously, and had his feet also immersed in water. He shivered, and felt a soreness at the root of the tongue. He had not been taking any medicine, and up to the time of the severe wetting, was in robust health. In addition to the symptoms detailed, he had a dribbling of saliva from the mouth, with headache and dysphagia. The pain in the tongue, as the disease advanced, was described by him as of a stinging nature. On examination, he (Mr. Croly) found the tongue covered with a white exudation, like a false membrane. The organ was large, protruded, and exquisitely tender to the touch. The sublingual space was infiltrated and chemosed, and the fringe beneath the tongue resembled a cock's comb. The tonsilitic regions were natural, and bore pressure without causing any uneasiness. He got the patient to open his mouth sufficiently to enable him to introduce his little finger, and the man winced when he depressed his tongue. He observed that the palate and tonsilitic regions, as seen internally, were not in the slightest degree altered. He considered from the patient's general symptoms, and the infiltrated condition of the tongue, caused by the exudation of lymph in addition to the engorgement with blood and serum, that no time should be lost in giving him relief by the knife. He accordingly introduced a sharp-pointed bistoury far back, and made a free incision at each side, parallel with the raphé. The wounds gaped and bled freely, and the patient's speech became suddenly better. He next punctured freely the chemosed sublingual space. A warm bath and a purgative draught were prescribed, and he warned the man against cold, and recommended him to come into hospital, but he declined. On the following day he called at the dispensary, and was much improved. The tongue was still tender to the touch, but the symptoms were so much relieved that, notwithstanding his advice to the contrary, he returned by boat to the country that evening, and he had heard nothing of him since. The notes of the next case to which he would call their attention, were sent to him by Dr. Barry, of Kanturk. He visited a man, aged forty, whose respiration, articulation, and deglutition were very painfully affected. His tongue protruded between his teeth, and was so engorged as to fill all the space up to the palate; and the tissues

from the chin to the larynx were infiltrated. With some difficulty, Dr. Barry introduced a long and narrow bistoury on the flat, and having turned the blade on its edge, he made two longitudinal incisions parallel to the raphé, with instantaneous relief. There was a copious flow of blood, which relieved the danger of impending suffocation, and the patient recovered in a few days, and was now in good health. The notes of the following three cases were kindly given to him by Dr. Leeper, of Keady. Dr Leeper called the cases 'Glossitis.' The first was followed by an attack of delirium tremens, and after that by diffuse inflammation of the left leg. Mr. ——, of full habit of body, a free liver, of intemperate habits, dined at a club with seven friends on New Year's eve. He left the hot dining-room late, and drove home, a distance of six miles, the night being bitterly cold and frosty. Next morning he awoke with sore throat, some difficulty of swallowing, and had a dry, parched, and swollen tongue. These symptoms rapidly increased, and Dr. Leeper was asked to see him at ten o'clock A.M. The tongue was then greatly swollen, filling up the mouth, and protruding an inch between the teeth. It was of a dark-brown, almost mahogany, color. The sublingual glands were swollen, and the sublingual spaces filled up to a level with the incisors. The submaxillary glands were not much affected. It was impossible to see either the tonsils or fauces, but the roof of the mouth was covered with red erythematous patches. When the tongue was well moistened he could swallow and speak without much difficulty. Six leeches were applied to the under surface of the tongue and sublingual space. They rapidly filled themselves, and from the bites there was a very considerable flow of blood, which gave immediate relief. Before two hours he could keep the tongue in the mouth, and swallow with ease. Dr. Leeper considered that the leeching, purging, and sudden withdrawal of his accustomed stimulant and food, brought on an attack of delirium tremens. The next case was one of acute glossitis, treated by free incisions on the dorsum of the tongue. P. R., a farm laborer, was attending a corn-mill, getting oatmeal prepared. When there, he assisted the kilnman in turning the oats when drying, got into a profuse perspiration, and soon afterwards exposed himself, on a cold, biting day in March, and was chilled. This was followed by swelling of the tongue, and difficulty of swallowing. Dr. Leeper saw him the next day. The tongue was greatly swollen, especially at the back part; there was an abundant flow of saliva from the mouth, and the surface of the tongue was covered with a dirty-white, creamy-looking paste. He was speaking thick, and said he would soon choke if not relieved. There was no enlargement of the tonsils or the submaxillary glands. Dr. Leeper made with a lancet, the only instrument he had with him, two incisions on the dorsum of the tongue, parallel to the raphé. There was a discharge of four or five ounces of blood and serum from these incisions. He received a message next day to say that the man was much worse, and on visiting him found the tongue more swollen, protruding from the mouth, and that deglutition and speech were more difficult than on the day before. He introduced a sharp-pointed bistoury, and made two long and pretty deep incisions on the dorsum from the base to the tip of the tongue. These bled profusely, and gave immediate relief, and the next day the patient could swallow without difficulty, but the speech was thick. His recovery from this time was rapid. In the third of

Dr. Leeper's cases, the patient was forty-five years of age. After exposure to cold he complained of pain and deafness in the right ear, and these were soon followed by difficulty of speaking. These symptoms, after having lasted upwards of a fortnight, were succeeded by rapid swelling of the right side of the tongue. When Dr. Leeper saw him, there was a profuse flow of saliva, so much so, that he thought he must be laboring under the influence of mercury, but there was no mercurial fetor, nor were the gums affected. The right side of the tongue was as much affected as it could be, but the left was not engaged. The tonsils were not enlarged; neither the salivary nor the submaxillary glands were swollen. The root of the tongue was hard and swollen. Any attempt to swallow was followed by a squirt through the nose and mouth, with coughing. It seemed as if the epiglottis could not act, and that the fluid passed into the larynx. Some milk was injected (by means of a large elastic catheter attached to an elastic bag) into the œsophagus. He sometimes succeeded in swallowing, but the attempt far oftener failed, and was very distressing to him. Dr. Leeper made a free incision, on the dorsum, from the back to the tip of the tongue on the right side, but the discharge of blood was inconsiderable, less than he could have supposed from the extent of the incision. Fomentations with hot chamomile-tea were used and kept in the mouth, and his health supported as well as possible with milk and beef-tea. Next day he was worse, and Dr. Leeper made a still deeper and more extensive incision on the right side of the tongue. There was no discharge of blood or serum, at least not more than two ounces, and no relief from it. Mr. Young, of Monaghan, saw the patient the next day, and advised leeches to the side, and under surface of the tongue. These induced profuse bleeding, which was kept up by cold water in the mouth, Dr. Young thinking that cold water promoted bleeding from leech bites, better than hot. The swelling of the tongue subsided at once after the leeching, but the right side of it remained thicker and harder than the left, and the man's speaking was still difficult and imperfect. Mr. Croly proceeded to say that it was superfluous to go into the subject more fully, as it had been already discussed at a previous meeting. He would only state that he thought the case he had detailed was a very well-marked case of idiopathic glossitis. The man working on a river and getting a severe wetting, not taking any mercury, the tongue becoming greatly swollen, the characteristic voice, the absence of any tonsilitic inflammation—all these features showed that it was a typical case of idiopathic glossitis.

"Mr. Richardson said he had a case of this kind a short time ago in the Adelaide Hospital. There was rapid swelling of the right side of the tongue and chemosis of the floor of the mouth. In that case he not only made an incision from the base to the point of the tongue, along the dorsum, but he also made a few punctures in the chemosis on the floor of the mouth, and the man was well in a few days. An exfoliation of mucous membrane followed, which, however, did not interfere with recovery. As there was some doubt regarding the period at which the treatment by long incisions was introduced, he wished to state that he had found in the Memoirs of the French Academy of Surgery several cases of this kind recorded. In one of these cases, published by De la Motte, in 1725, the tongue became greatly swollen in less than five hours. It soon filled the mouth, and protruded from between the teeth.

Bleedings from the jugular vein, arm, and foot were performed without relief, but a rapid cure followed three deep incisions along the dorsum, extending from base to apex. The patient could speak in an hour after the incisions were made. In another case that occurred in 1744, rapid swelling of one side of the tongue took place in a woman; respiration was obstructed, and deglutition impossible. It was cured by one long, deep incision. Louis mentions a case that occurred in the military hospital at Metz, in the year 1740. The tongue became spontaneously swollen. Alexander Benedictus, who published the case, mentioned that M. Casteras, the senior physician of the hospital, directed him to scarify the tongue lightly. This, however, was not sufficient, and the patient died in two days in consequence of the swelling. As Louis truly observes, life might have been saved by a couple of deep incisions along the dorsum of the tongue."

Artificial Teeth Swallowed.—At a late meeting of the Medical Society of London (*Lancet*), "Mr. Henry Smith showed a gold tooth-plate and teeth that had been swallowed by a gentleman who was a patient of Dr. Hamilton, of Mitcham. Mr. Smith saw the man six hours after the accident, and was able then to touch the plate with a pair of long forceps; but all attempts at extraction were unavailing, so Mr. Smith pushed the plate down into the stomach. The patient then felt relief, and nine days after passed the plate by the bowel with but little pain.

"Mr. Smith also showed a similar plate in vulcanite, given to him by Dr. E. Johnson, that had been swallowed and passed through the patient in safety.

"Dr. King narrated a case where a man swallowed his false teeth; he was seen by him at the Edinburgh Infirmary. Mr. Syme, not being able to pull the teeth up, at once pushed them down. A few days after Dr. King was sent for to see the man, and found him dead. The angular hooks on the tooth-plate had torn the œsophagus, and perforated the aorta. In the stomach was a complete cast of its cavity in blood-clot.

"Mr Carter had seen a case where a brooch was swallowed. The patient was made to eat a large quantity of bread, and then an emetic was given, when the bread and brooch all returned together

"Dr. Morrell Mackenzie was in the habit of using an instrument known on the Continent as the 'ramoneur' in these cases. It was passed down, and as it was withdrawn a sort of brush expanding caught the foreign body, and so removed it."

Tanite.—The *Scientific American* says: "We understand that a new substitute for jet and vulcanite is about to appear in the market. The material is called tanite, and is said to be readily worked, and to equal in appearance the finest Whitby jet. Time will show whether it is to be ranked among the thousand compositions which have had their trial and passed away, or whether it will take its place as what it claims to be—a new invention, the result of processes and principles not in common use."

"*Disinfecting Cotton.*—It has long been known that the best disinfecting agent for wounds, cancers, ulcers, and decaying animal matter is the permanganate of potash. Dr. Fresenius possesses a method for applying it which seems to overcome many of the difficulties hitherto felt in practice, and this consists in saturating gun-cotton with a solu-

tion of the permanganate of potash. The gun-cotton is not decomposed by the manganese salt, as ordinary cotton is, but seems to expose and keep the greatest amount of surface for the action of the disinfectant. Bandages of the gun-cotton thus saturated with permanganate of potash can be readily applied, and in cases of open wounds, cancers, and the like must prove very acceptable to surgeons. The gun-cotton is harmless as long as it is wet, and is an article that can be obtained in any quantity since its great use in photography. Permanganate of potash must be applied in solution in order to be effective, and is an agent that ought to be more generally known and applied in this country than it has hitherto been."—(*Jour. of Applied Chem.*)

Preservation of Microscopic Preparations by a New Fluid. (*Lancet.*)—"Max Schultze, in the last part of his *Archiv für Mikroscopik. Anatomie*, observes that of all fluids now in use for the preservation of microscopical specimens, glycerin, either pure or mixed with other reagents, is most widely employed. This substance, though possessing the peculiarity of rendering many tissues transparent, yet unites with fats, and so modifies the differences of refraction occasioned by the presence of fat. Since the introduction of perosmic acid a new disadvantage attaches to glycerin—namely, that if the least trace of the acid remains, the glycerin becomes black, especially around the preparation, and there are no means of removing perosmic acid completely; washing, even when continued for days, being inefficient. Under these circumstances, M. Schultze has been engaged in seeking for a fluid which might replace glycerin, and has, he thinks, discovered one in a nearly concentrated watery solution of *acetate of potash.* According to Dippel, through whose work Schultze first became acquainted with it, it was originally employed by Sanio for the investigation of vegetable structures in place of chloride of calcium; and Dippel found it serviceable also for preserving animal tissues. Schultze applied the fluid in the same way as glycerin, a drop being allowed to flow over the specimen after it has been prepared in water or serum, without raising the cover. After the lapse of twenty-four hours the preparation is luted down. As the fluid neither dries up nor crystallizes out, the specimens may be long preserved in it. M. Schultze states that the solution has now been in use for two years in his laboratory, and no disadvantages have been found to attach to it, whilst it possesses all the advantages of glycerin."

"*Solvent Properties of Anhydrous Liquid Ammonia.*—Professor Seely has made the discovery that anhydrous liquid ammonia has a solvent power upon certain metals, and he has actually succeeded in obtaining a solution of sodium in this liquid. The solution presents all the physical characteristics of a true solution. On evaporation the sodium is gradually restored to the metallic state in the same continuous manner in which the solution has been affected. The color of the solution is a very intense blue."—(*Jour. of Applied Chem.*)

"*Congelation of Bisulphide of Carbon.* By N. V. Wartha.—The congelation of bisulphide of carbon, which, according to the treatises on chemistry, requires a temperature of —90° for its solidification, may be easily effected by directing a very rapid current of dry air upon the

surface of the pure liquid (purified by an amalgam of silver) contained in a glass vessel.

"If a thermometer be plunged into the bisulphide of carbon during this operation, a snowy crust will be noticed covering the sides of the vessel and the thermometer, even before the temperature has become 0°. The temperature then rapidly descends to —18° and a white mammillated mass rises to the surface, and sometimes even stops up the tube for conducting the air. Soon all the liquid disappears and the thermometer commences to rise again up to —12°, where it remains stationary as long as the bisulphide of carbon is solid. In this state it presents the same phenomena as solid carbonic acid.

"The bisulphide of carbon will remain solid for some time, and in this state it possesses a peculiar aromatic odor. Its formation may be utilized for the production of ice, thus: add to some water contained in a capsule a few cubic centimetres of bisulphide of carbon, and bring a rapid current of air to play upon it. The water will soon solidify, just as the bisulphide of carbon itself, provided the latter is present in sufficient quantity; the temperature of the mixture may then reach —15°. Bisulphide of carbon cannot be solidified *in vacuo*, except it be mixed with ether. The temperatures above cited are in degrees centigrade."—(*Deutsche Chemische Gesellschaft* and *Chem. News.*)

Explosive Mixtures.—The *Boston Jour. of Chemistry* says: "The following prescription gave rise to a violent explosion on being made up by trituration in a rough Wedgwood mortar: ℞. Pot. chlor. ℥iss; ac. tannici, ʒiss; olei gaultheriæ, gtt. xx. M. Again, a mixture of chlorate of potassa and catechu, prescribed as a dentifrice, occasioned a violent explosion in the mortar in which it was rubbed. Erhard's explosive powder for shells is composed of equal proportions of tannin and chlorate of potassa. Lastly, a 'pharmacien' received the following prescription to dispense, namely: Pot. chlor., 8; hypophosph. of sodium, 4; syrup, 62; water, 125 parts. In order to expedite matters, he vigorously triturated the salts in a mortar, and the result naturally was that he received some wounds on the body, while the pestle was thrown to a distance. The two salts should, of course, have been dissolved separately. These and similar reactions depend on the facility with which oxide of silver and chlorate of potassa part with their oxygen to organic matter, and the consequent elevation of temperature due to the rapid decomposition of the salt."

Chloroform to remove Paint and restore Color.—"When color on a fabric has been accidentally or otherwise destroyed by acid, ammonia is applied to neutralize the same, after which an application of chloroform will in almost all cases restore the original color. The application of ammonia is common, but that of chloroform is but little known. Chloroform will also remove paint from a garment or elsewhere when benzole or bisulphide of carbon fails."—(*Ibid.*)

"*Spongy Iron as a Deodorizer.*—Dr. Voelcker declares spongy iron to be a deodorizing material of greater power than animal charcoal Sewage water passed through a filter of this substance is said to be completely purified; and this filtered water, after having been kept six months protected from the air, has been found to be perfectly sweet and

free from any fungoid growth. The spongy iron is obtained by calcining a finely-divided iron-ore with charcoal."—(*Med. Times and Gaz.*)

"*Gold Refining by Chlorine.*—The inventor of the process, Prof. Miller, of the Royal Mint in Sydney, has just been putting up and working the apparatus in the Mint at Philadelphia, with very satisfactory results.

"A bar of some 500 ounces, containing antimony, which rendered it very brittle and 7·80 fine, was refined in one hour and a half to a fineness of 9·97, and made perfectly tough, every trace of antimony having been removed.

"The impure gold being melted in a crucible previously saturated with melted borax, and having a layer of fused borax over the metal, the gas is generated in a stone-ware vessel, and led by a flexible hose to a pipe-clay tube, by which it is carried to the bottom of the metal. All the chlorides of antimony, tin, etc. are so volatile at the temperature employed as to escape, but the silver chloride is retained by the layer of borax, and is poured out into moulds after the gold has become solid on cooling."—(*Jour. Frank. Inst.*)

"*Reducing Silver Chloride.*—In connection with the process for refining gold, described above, an excellent method for reducing the silver-chloride obtained in that operation has been perfected by its inventor, Prof. Leibius, Assayer of the Mint at Sydney. The silver-chloride is cast in flat plates, and then arranged in a box or frame, with alternate plates of zinc coupled as for a galvanic battery. The whole being immersed in water, a galvanic action is set up, the reduction is soon finished, and the silver is so compact and free from zinc that, without acid treatment, it may be carried to the melting-pots."—(*Ibid.*)

"*Genuineness of Silver Plating on Metals.* By Dr. Böttger.—A cold saturated solution of bichromate of potassa in nitric acid (sp. gr. 1·2) is taken and applied to the metallic surface to be tested, after having been previously cleaned with strong alcohol, in order to remove dirt, fatty matter, and especially any varnish. A drop of the test fluid is then applied to the metallic surface by means of a glass rod, and immediately afterwards washed off with some cold water. If pure silver is present (as regards silver coins, these are left in contact with the test fluid for a greater length of time), there will appear clearly a blood-red colored mark (chromate of silver). Upon German silver the test liquid appears brown, but after washing with water the blood-red colored mark does not appear; the so-called britannia-metal is colored black; on platinum no action is visible; metallic surfaces coated with an amalgam of mercury yield a reddish speck, which, however, is entirely washed off by water; on lead and bismuth the test liquid forms a yellow-colored precipitate; zinc and tin are both strongly acted upon by this test liquid, which as regards the former metal is entirely removed by water, while, as regards the latter, the test liquid is colored brownish, and addition of water produces a yellow precipitate which somewhat adheres to the tin."—(*Polytechnisches Journal* and *Chem. News.*)

Cutting Hard Substances—Tilghman's Process. By Coleman Sellers.—"How to cut or carve, mechanically, hard substances, such as

stone, glass, or hard metals, in an expeditious, accurate, and economical manner, has always engaged the attention of engineers. At the present time the rapidly-increasing cost of manual labor makes improvements in this direction more needful. The discovery and utilization of opaque crystallized carbon, cheaper than transparent diamonds, but perhaps equally durable, has gone far in this direction. Now, Mr. B. C. Tilghman, of Philadelphia, comes forward and shows that a jet of quartz sand thrown against a block of solid corundum will bore a hole through it $1\frac{1}{2}$ inches in diameter, $1\frac{1}{2}$ deep, in 25 minutes, and this with a velocity obtainable, by the use of steam as the propelling power, at a pressure of 300 pounds per square inch—a remarkable result, when we consider that corundum is next to and but little inferior to the diamond in hardness.

"A hole 1 inch long and $\frac{1}{4}$ inch wide was cut through a hard steel file $\frac{1}{4}$ inch thick in 10 minutes, with a jet of 100 pounds steam.

"A stream of small lead shot, driven by 50 pounds steam, wore a small hole in a piece of hard quartz; the shot were found to be only very slightly flattened by the blow, showing their velocity to have been moderate.

"Among the curious examples of glass cut by this sand-blast was shown a piece of ordinary window-glass, which, having been partially protected by a covering of wire gauze, had been cut entirely through, thus producing a glass sieve, with openings of about $\frac{1}{12}$th of an inch, the intervening glass meshes being only $\frac{1}{16}$th of an inch wide. This seems to have been produced more as a curiosity than for any practical purpose. Should such a sheet of perforated glass be required, it is questionable if it could be produced for a solid sheet by any other method.

"A microscopic examination of the sheet-glass depolished by this process shows a succession of pits formed by the blows of the impinging grains of sand, and looks more uniform than do surfaces ground by any rubbing process."—(*Ibid.*)

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"*Metal Castings.*—The most wonderful castings of iron and bronze are made by using models of wax. These are imbedded in moulds made of fine ground earth, which are then heated red-hot. The mould is baked, the wax disappears, and the metal, when poured in, exactly takes its place. The wax model is often made in a gelatin mould, which, being very elastic, will slip off the original object which is to be copied into metal."—(*Exchange* and *American Artisan.*)

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"*Lute for Corks, etc.*—Anthracene acts capitally as a substitute for paraffine (either by itself or mixed with the latter) in covering corks or joints of apparatus requiring to stand a comparatively high temperature. A luting of anthracene is capable of standing a high pressure and temperature combined for a lengthened period."—(Robert F. Smith, *Chem. News.*)

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"*Marking Ink for Parcels.*—If you dissolve asphaltum, grahamite, albertite, or any mineral of this character in naphtha or oil of turpentine to a thin fluid, you will obtain an ink to answer all your purposes, viz., to dry quickly, not to spread, and the markings to be nearly indestructible."—(*Chemist and Druggist.*)

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ORIGINAL COMMUNICATIONS.

ANÆSTHETICS.

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From the earliest times it has been customary in medicine to use narcotic agents for relieving and preventing pain; and, very naturally, this stupefying property of many drugs suggested to physicians the possibility of discovering some means of producing complete insensibility to physical suffering. At last such means were found, but the discovery, like many others, was made after the search for it had been nearly abandoned, and by some high authorities stigmatized as hopeless. Not many years before the introduction of ether as an anæsthetic, the eminent Velpeau declared the hope of such a discovery futile, and asserted that surgical operations were impossible without pain. But the prophecy did not prevent the discovery from being made. Just so did Lardner predict that steamships could not safely cross the ocean; and so did Comte declare that the dwellers upon earth could never know anything of the chemical constitution of the heavenly bodies. Lardner and Comte as well as Velpeau have proved false prophets, and men of science have begun to realize the danger and folly of such prophetic assertions.

Previous to the year 1844, there were several cases on record of surgical operations which had been performed upon insensible patients. One or two drunken men had suffered amputation of a limb in complete unconsciousness of the operation, and a few women had been known to give birth to children while intoxicated, without being aware of pain. But these cases were not common, and when alcohol was purposely employed for preventing pain, its action was found to be uncertain, and in some cases to heighten the torture. Opiates failed, likewise, and were, furthermore, found to retard recovery.

In the year 1800 Sir Humphry Davy published his famous researches upon nitrous oxide. He mentioned the power of that gas to

relieve pain temporarily, especially to quiet headaches, but does not seem to have thought of using it in surgical operations. Dr. Beddoes, however, employed it to some extent in quieting patients suffering from nervous disorders. A little later, about 1821, a certain Dr. Hickman, evidently thinking of the famous Grotta del Cane, found that small animals could be rendered insensible by partially asphyxiating them with carbonic acid gas. He proposed accordingly to stupefy human beings in the same way in order to render painless operations possible; but of course so dangerous a plan was never carried out. Another brilliant individual proposed to cause insensibility by compressing the jugular vein, but his plan likewise was laughed down as it deserved to be; and for a number of years mesmerism was looked upon as affording a means of solving the problem; but, although certain painless surgical operations seemed to have been performed upon patients who were in peculiar abnormal nervous conditions, no results of especial value were obtained.

In short, it was not until the year 1846 that the great discovery was unquestionably made public, and the scientific world satisfied of the practicability of rendering quite painless the kindly-cruel slashes of the surgeon's knife. The discovery seems to have been made somewhat earlier than 1846, however; and the first recorded operations seem to have been made not with ether, but with nitrous oxide as the anæsthetic. Yet ether has some claims to priority of discovery, as I shall show hereafter.

Now, although my purpose in the following pages is mainly to give a brief account of the use of various substances for anæsthetic purposes, it is manifestly necessary for me to say a few words as to the history of the ether and nitrous oxide discoveries, and to review, as summarily as possible, the assertions made by the various claimants to the honor of making this great revelation. The discovery may be safely called the greatest single discovery ever made in surgical science, and it is but right that those who have experienced and may yet experience its benefits should know to whom their gratitude is chiefly due.

There are three prominent claimants to the honor, viz.: Dr. Horace Wells, of Hartford, Dr. Charles T. Jackson, of Boston, and Dr. W. T. G. Morton, also of the latter city; and, as I have no personal interest in any of these individuals, my judgment is based simply on the evidence which has been published by the friends of each claimant, by the congressional committees which investigated the claims, and by the various learned societies which awarded honors to the discoverer or discoverers.

In the year 1844, Dr. Wells, having in mind Davy's experiments with nitrous oxide, administered that gas to certain patients, and, while they were under its influence, extracted teeth from their jaws, without

their being conscious of pain. This was in the presence of competent witnesses, who afterward certified to the success of the operations ; but the subsequent attempts to repeat the experiments in public seem, in some instances at least, to have failed ; and so Dr. Wells did not at the time attract much attention.

At a somewhat earlier period, Dr. Jackson observed that inhaling the vapor of ether relieved the severe pain produced by accidentally breathing chlorine gas. In the winter of 1841–2 he used the ether for that purpose upon himself, and found that, contrary to the opinion generally received at that time, the vapor could be safely inhaled until complete stupefaction ensued ; and the pain caused by accidentally inhaling chlorine is of the most severe kind. Dr. Jackson communicated his discovery to several well-known persons, among whom were one or two men of scientific reputation, and also tried to persuade a certain Dr. Bemis to administer the ether before extracting teeth ; but Bemis declined to run the risk. After Morton made his claim to the discovery these persons testified to the fact of Jackson's communication to them. Unfortunately for himself, however, the discoverer did not at that time publish his observations, alleging as his reasons for this neglect the extent to which he was then occupied upon geological surveys, his desire to go abroad and perfect his discovery in the hospitals of Paris, and his confidence that his rights were rendered secure by the verbal communications he had made to his friends. It is worth noting in this connection that Dr. Jackson, in his writings upon the subject of anæsthesia at a somewhat later time, discredits the claims made by Dr. Wells, on the ground that he himself had not succeeded in producing insensibility with nitrous oxide. He distinctly asserts that nitrous oxide is not an anæsthetic. Experience has since confirmed Wells's experiments, however, and history must award him great credit for them, notwithstanding his misfortunes.

In the latter part of the year 1846, Dr. W. T. G Morton, who, it is said, had long been searching for an anæsthetic agent, was informed by Dr. Jackson that ether would suit his purpose, and was advised to try it in extracting teeth. This information was given in the presence of witnesses, who afterward testified under oath—asserting, moreover, that Morton at the time appeared wholly ignorant of the nature of ether, not even knowing whether it was a liquid or a gas. Acting upon Jackson's recommendation, and encouraged by the results which that gentleman had personally obtained in the chlorine case, Morton tried the experiment, meeting with perfect success. Some time afterward he procured the privilege of administering ether in a capital operation at the Massachusetts General Hospital, where the triumph over pain was similarly complete. The discovery was then published to the world, and in spite of the opposition of a few timid physicians and some bar-

barous clergymen, was almost immediately adopted where civilization had spread. But for some months after the first experiment Morton admitted to several persons with whom he conversed upon the subject that the whole credit of the discovery was due to Jackson, at least so far as scientific merit was involved. Later, however, when the question became a matter of pecuniary importance, he seemed desirous of monopolizing all the credit for himself.

Now the evidence seems to lead to the following conclusions: Dr. Wells first proved publicly that complete anæsthesia was possible, but neglected to force his discovery into general notice. To Dr. Jackson is due the credit of having discovered the anæsthetic property of ether, although he was guilty of culpable neglect in not pushing his discovery forward at once into completeness. The discovery having been made, it was criminal not to give the world at once the benefit of it. Some years of suffering over all the globe might have been prevented had Jackson only been more prompt.

And Dr. Morton deserves much applause for so vigorously introducing the new agent, whatever may be said as to his quackery in endeavoring to patent it under a fantastic name, or as to his attempts to monopolize the credit of a discovery which he did not make.

About a year after the ether discovery, Simpson found that chloroform would produce similar effects, and shortly afterward many other agents were recommended. Some were in a measure successful, but others proved to be terrible failures. Yet up to the present time three anæsthetics — viz., ether, chloroform, and nitrous oxide — have held their own against all rivals; that is, unless we except one or two substances recommended in the past two or three years, which have not yet been sufficiently tested in general use. Let us now run rapidly over the list of the various anæsthetics which have been tried, and take a passing glance at their respective merits.

For convenience we may now divide anæsthetics into three classes. First, there are those which are administered by inhalation. Second, certain anæsthetics are applied locally—as, for instance, rhigolene. And the third class consists of those which, like chloral hydrate, are taken into the stomach.

Beginning with the first of these classes, we are of course at once confronted by the three chief anæsthetics already mentioned. Since these are so familiar to every one, at least by name, I will content myself with a word or two concerning their relative value. Ether is the safest, chloroform the quickest, and nitrous oxide, at least for minor operations, the least disagreeable, and, take it for all and all, the cheapest and most convenient. Patients have died while under the influence of each of these substances, and, as the percentage of such deaths is about eight times greater with chloroform than with ether, the verdict

as to safety is in favor of the latter. On the battle-field, however, where compactness as well as safety is required, it has been found convenient to use a mixture of four parts of ether with one of chloroform, thus combining in some degree the advantages of both anæsthetics.

With regard to nitrous oxide there seems to be much controversy, many operators speaking most highly of it, and others denouncing it in almost unmeasured terms. Dr. B. W. Richardson, probably the most prominent living authority upon the subject of anæsthetics, pronounces quite decidedly against it, however, on the ground that air is excluded during its administration, and that its action is due wholly to asphyxia. But for tooth extraction it is perhaps as good as any anæsthetic in common use. Taking all classes of operations into account, the majority of medical men pronounce in favor of ether.

In addition to the three more common anæsthetics, there are, as far as I can ascertain, twenty-four other substances which have been tried for similar purposes. These are all in the first class. Many of them are hydrocarbons; one of which, amylene, introduced originally by Dr. Snow, was almost immediately abandoned on account of deaths having resulted from its use. Simpson and Snow also made experiments with benzol, which gave unsatisfactory results, although undoubtedly possessed of anæsthetic properties. Oil of turpentine has also been employed. Dr. Wilmshurst used it on shipboard on one occasion when his ether had given out, and found it available in minor operations. Ordinary coal-gas was tried by Nunneley, and marsh-gas (CH_4) was recommended by some authority whose name I have not been able to find; and a few years ago a mixture of hydrocarbons prepared from coal-naphtha was recommended by certain physicians in Boston, under the name of kerosolene. The substance was prepared by Downing, of South Boston; was very light, colorless, tasteless, and of a more agreeable odor than ether. But it never came into general use. Being a variable mixture, it was not to be depended upon. One physician, who tried it carefully in two cases, tells me that its anæsthetic properties were far more feeble than those of ether, and that it produced very unpleasant effects upon the patients.

Many chlorinated compounds besides chloroform have been made subjects of experiment in this direction, with variable success. In 1848 the chloride of ethylene ($C_2H_4Cl_2$) was recommended quite strongly by Nunneley, but was found to have no advantages over chloroform. An isomeric substance, the chloride of ethylidene has recently been introduced by Liebreich, and is highly spoken of. But the latter substance is very expensive at present, though perhaps improved methods of manufacture may obviate that objection. But the chloride of methylene (CH_2Cl_2) offers the best results of any of the chlorinated

anæsthetics, having been found by Richardson to be marvelously rapid in its action, and to be in all probability safer than chloroform.

Jackson found the chloride of methyl to act like chloroform in most respects, save that its use was followed by severe headache; and Flourens, in 1847, proved that the chloride of ethyl was effective. But the latter compound is inconvenient, its low boiling-point, 42° F., rendering it difficult to preserve. The di- and tri-chloride of carbon were used by Cattell in 1848, but without especial advantages, and in 1866 Simpson tried the tetrachloride, CCl_4. This latter substance was found to be both rapid and good.

Among oxygenated compounds, containing the same elements as ether, we find several more anæsthetics. At a very early date Figuier recommended acetic ether, which he found to be apparently safe, but very slow. Twenty minutes were needed in order to stupefy a patient with it. Formic and œnanthic ethers have likewise been experimented with, but produced unpleasant effects. And quite recently Dr. B. W. Richardson has recommended methylal ($C_3H_8O_2$) as a useful substance for producing insensibility to pain. The last-named authority has, however, obtained very recently admirable results with the oxide of methyl, and also with the compound which it forms by union with common ether. The new anæsthetic is a near relative of ether, and is formed by the action of sulphuric acid upon wood-spirit, precisely as ether is produced from ordinary alcohol. Unfortunately the substance is gaseous, and therefore inconvenient, although exceedingly good, as an anæsthetic. It is largely absorbed by ether, however, over one hundred volumes of it being dissolved by one of the latter; and the solution thus obtained is exceedingly useful. As far as the evidence goes, it is perfectly safe, is pleasant to inhale, is wonderfully rapid, and causes neither headache nor nausea in the patient after recovery. In eleven cases of tooth extraction, the whole operation, from beginning to inhale to entire recovery, was complete in less than three minutes. Judging simply from the meagre accounts as yet given of the action of this substance, it seems to be the best anæsthetic thus far employed, and must soon come into extensive use. It is very cheap, and acts so rapidly that there is but little waste in administering it. To be sure, experience may find objections to the new agent, but the oxide of methyl promises so well as to deserve thorough trial.

Four more anæsthetics belonging to this class remain to be mentioned. One of them, nitrous ether, I include in my list simply because it has been tried on the lower animals; but it proved to be deadly when inhaled. Nitric ether was made the subject of experiment by Simpson, who found that fifty or sixty drops inhaled from a handkerchief would cause insensibility; but the substance is dangerous. The third, the bisulphide of carbon, was early proposed by a Norwegian, Thanlow,

but was proved to be dangerous as well as disagreeable. Lately, however, it has been found that the peculiarly disgusting odor of the commercial article is due to an impurity, which may be removed by rectification over quicklime. The pure bisulphide then has a pleasant ethereal smell, and is not known to be harmful. It is very cheap, or rather can be made very cheaply, and might prove of value. It would certainly be worth while to try its effects upon some of the lower animals, whether it proved available or not for anæsthetic purposes. The fourth and last of these compounds is the bromide of ethyl, which is said to be of value. I have been unable to find any details as to its use.

Turning now to those substances which are applied externally, for producing local anæsthesia, we again find our old friends, ether and chloroform, with some other compounds. Most of the anæsthetics of this class, or at least those to which the title of anæsthetic most properly belongs, act by freezing the part to which they are applied. And it seems at first sight strange that this mode of producing insensibility to pain should have been overlooked for so many years, for it has long been known that volatile liquids, rapidly evaporating, absorb much heat ; and that parts of the body which are benumbed by cold are far less sensitive than when moderately warm. To be sure, it has been asserted that the Chinese have long used oil of peppermint as a "pain-killer," although it does not appear that they ever employed it for preventing the tortures inflicted by the knife of the surgeon.

The earliest recorded cases of the use of artificial cold as an anæsthetic were in the year 1854, when Harris, and about the same time, also, Richet, availed themselves, the one of chloroform vapor, and the other of the vapor of ether, for this purpose. Harris' method with the vapor of chloroform was carefully tried by Nélaton and Dubois, and with them proved successful, although subsequent experiments failed. But nothing really of great value in this direction was done until quite lately.

In 1862, Dr. B. W. Richardson, while attending a ball, in London, was playfully approached by a lady who threw upon his forehead a jet of cologne-water from a Rimmel's vaporizer. A sensation of cold was the result, and the doctor, who had long been in search of a local anæsthetic, realized that it was practically found. He immediately began a series of experiments, which finally led to the introduction of his ether spray process, in about the year 1865. This process, which consists in throwing upon the part to be operated upon a jet of artificially cooled ether spray, has since proved highly successful, and is strongly recommended for minor operations,—lancing felons, for instance. Later still, a mixture of hydrocarbons, known as rhigolene, has been used in our country. A few drops of the substance, poured upon the hand, will evaporate so rapidly as to benumb completely the portions of surface with which it comes in contact. It has been well spoken of.

There are two or three other substances, which, although not strictly anæsthetics in the generally accepted meaning of the term, may appropriately be mentioned here. In 1851, Aran noticed that the chlorinated chloride of ethyl, and also the tri-chloride of carbon, when brought in contact with the skin, would exert a benumbing action which extended considerably below the surface. The latter compound being very slow in its action, however, he only recommended the former. And, very lately, iodoform, a solid body closely allied to chloroform, has been extensively used in a similar manner. It is found especially valuable in relieving the pain from burns, scalds, and various skin diseases.

There yet remains to be noticed that class of substances which are known as narcotics; which produce insensibility when taken into the system by way of the stomach. But, as it is doubtful whether the title of anæsthetic belongs strictly to any member of this class, a detailed account of them would not be in place, even were it possible to introduce it, here. But I may recall the operations already cited, which were performed upon patients narcotized with alcohol, and I may also give a brief account of the new agent which is so extensively used, the hydrate of chloral. An analogous compound, the hydrate of bromal, has also been employed by Steinauer, and Liebreich has recommended the use of tri-chloracetic acid.

Chloral, discovered by Liebig in 1832, is a volatile liquid produced by the action of chlorine upon alcohol. It unites with water to form a crystalline hydrate, which is the substance at present so fashionable, and which was introduced into medicine, by Liebreich, in 1869. But chloral unites with alcohol to form an alcoholate, which resembles the hydrate in many respects. Therapeutically, however, it differs strongly from the latter, and is regarded as a very dangerous impurity. It is quite possible that all the injurious effects which have been by some attributed to the hydrate, have been really due to the presence of this impurity. Although the new remedy appears to be perfectly safe in small doses (I have heard from physicians who have used it in hundreds of cases, on the most excitable kind of patients, without a single bad effect), it seems still doubtful whether its protracted administration in large quantities is advisable. Probably, like all other useful drugs, it is perfectly safe when properly used, but dangerous when misapplied. Therefore it is better for invalids to take it only by medical advice, and not to trust to their own fancies. Administered carefully and intelligently, however, by competent advisers, it is one of the most valuable remedies known. The sleep induced by chloral hydrate is long and quiet, and the waking is unattended by headache or nausea. There is sometimes a slight dullness, which is only temporary. And the remedy is unquestionably quicker, better, and safer than opium. The dose ranges

from ten to one hundred and twenty-five grains,—twenty and thirty being common. In one case four hundred and sixty grains are said to have been swallowed by mistake, and the patient, who recovered, exhibited symptoms like those caused by an overdose of opium. In such cases, strychnia in small doses is recommended as an antidote, it seeming to neutralize the effects of the chloral, while its own characteristic action is masked.

One capital operation upon a patient under the influence of chloral is on record. He was completely insensible, but the dose of the anæsthetic was very large, and produced alarming symptoms. Therefore the surgeon who performed the operation speaks against the use of chloral hydrate for similar purposes in future.

But for quieting and relieving delirious, sleepless, or neuralgic patients, to say nothing of innumerable other cases in which it is applicable, chloral hydrate seems to stand at the head of the long line of narcotics.

NOTES FOR A MEMOIR ON THE PATHOLOGY OF THE TEETH.

BY A. C. CASTLE, M.D.

Read before the First District Dental Society, New York.

(Continued from page 237.)

FOURTH GROUP. THE TRANSPARENT-WHITE ALABASTER TEETH. THE BLUE-WHITE PEARLY TEETH, AND THE TRANSPARENT-YELLOW TEETH WITH CLEAR EDGES.

WITH the fourth and last group, I conclude my remarks upon the notes of the pathology of my classification of the dental organs.

With unremitting zeal I have ever sought knowledge to base my treatment of the dental system upon correct medical and mechanical science. I have not failed to avail myself of the experience of others, from the most exalted to the lowliest in the profession. Indeed, some of my best lessons have been derived from the injurious practices of the latter.

I have respectfully and patiently listened to the experience of many dentists,—from some of whom, who have given wordy descriptions of their several individual modes of preserving the teeth forever, better things might have been expected than the display of their utter regardlessness of any knowledge or discrimination—I will not say pathology—of the physical varieties of the several densities of the teeth, and the *dissimilar strength* characterizing the multiform organization and construction of the enamel and bone tissues which, as mechanics, they should not have failed to recognize. Singular as this extraordinary oversight or omission of a remarkable existing vital

physiological principle—always presenting itself—may appear, it is not so extraordinary under these adverse circumstances as the infallibility of their simple mechanical appliances, the inscrutability of which depends upon their individual magic of "doing it." A phenomenon that demands a recording page. But the record may with propriety ask the question, Why is Hippocrates more infallible than Herophilus, or Herophilus than Asclepiades, or his pupil Themiston, or Erasistratus, or Plistonicus, or his disciple Praxagoras?

We in our nature were always truthfully desirous of preserving the teeth of the many of the young and the beautiful who come under our professional care, some of whose very natures — affinity, spiritualists term it—imbue our sympathies with kindred affection, that all our zeal of friendly intention has concentrated our professional resource upon the one sincere object,—that of preserving and beautifying their teeth regardless of pecuniary reward. But, alas! hereditary predisposition, disease, malorganization, or premature decay is there, and we have not the principle of life in our power to renew or increase the vital force or improve it at our pleasure. The source of life and the causes of disease are hidden from our view. We can neither physiologically change, remove, nor restore a part of the body decayed and lost. We can interfere by our *nursing* offices with the action—whatever that may be—of Nature, through the influence of the general system, by general constitutional treatment, to improve the general health, and the temporary expedients of patching the decayed parts of teeth with gold, etc.; the duration of the latter depending upon the continued health of each individual, even in extreme delicate constitutions. It must be borne in mind that the derangements of the system, generally, do not consist in change of mechanical apposition, connection, or motion, which altogether control and constitute the derangements of a machine. Our organization is governed by invisible laws. Destitute, then, as we are of the powers and the information of the mechanist in this respect, we know that the diseases of any organ of the animal system are rarely the result of mechanical changes, and that our remedies do not act upon mechanical principles beyond the mere filling of decayed teeth mechanically. The future of professional observations opens an extended vista of leading points, viz., the discrimination of dento-pathological derangements, of dento-sympathetic affections; the anticipation of their changes and progress, and the indications of cure, and how these can be aided by the knowledge of anatomical, physiological, physical, and pathological scientific truth.

If I may be permitted to speak of my own experience, it has been the vital point of my existence to conquer or surmount never-ending difficulties. To this end I have served as surgeon in military hospitals

in South America; as ship-surgeon: I faithfully fulfilled my time as assistant-surgeon in the New York Hospital, for which I received honorable certificates; I had the advantage of four years' office practice in the surgical department under the auspices of my much-esteemed preceptor the late distinguished surgeon Dr. John C. Cheesman; I served as assistant in the dental office of my father; in the same class with the now distinguished surgeons, James R. Wood, Carnochan, Worster, Alonzo Clark, and McReady, and with them I received medical honors from Mott, Stevens, Delafield, Torrey, John Augustine Smith, and others. With all this and forty years' practical experience, with unremitting attention, study, and observation, I have ever experienced that it is not possible to perform impossibilities; that no medical or mechanical Joshua exists that can command the laws of nature to stand still, or decay to retrograde. But I am told by an apothecary's clerk who graduated into being a dentist from selling cosmetics from behind a counter, that by his magic application of the mallet he can drive a piece of gold into a hole in a tooth and make it last forever!—not unlike the Egyptian of old, who advertised that his embalmed bodies should last ten thousand years or the money would be returned. I drew upon my bankers for two dollars, and paid for an annual membership in a dentists' society for mutual improvement. There I soon became acquainted with my own ignorance caused by misspent studies. As the Chinese philosophers sent a watchmaker to repair the steam-engine of a raised British war-steamer sunk by their guns before Peiho, so did similar philosophic mathematicians draw diagrams showing how nutrition was conveyed to the teeth, and how they are, or ought to be—on the blackboard—constructed and organized, and how simple it is to preserve them forever,—"a little sop of creasote," or "aconite," or "chloride of zinc," "placed in the cavities to obtund the sensitive dentine," and "fill over" with amalgam, or mallet in gold, and the thing is accomplished. This sort of dental science almost converted me into an uneasy state of skepticism. Believing that possibly a great mistake or oversight of omission had been made when man was created, I could not avoid philosophizing, why it was that a dentist's mutual improvement society—with a blackboard—was not first organized and consulted when Adam was teething. All then, indeed, would have been perfect. But the last, best, and admitted the most beautiful of creation—woman—Eve, being tempted, she inveigled Adam to use his teeth, by which he gained the terrible knowledge of the general doom,—that all created things must decay and die, not even omitting the teeth by which he ate of the forbidden apple. "But every one shall die for his iniquity; every man that eateth a sour grape, his teeth shall be set on edge," saith the Prophet Jeremiah.

To the schools I have already mentioned—certainly the best institutions of which the world can boast—must the student of the dentist's art look to become a well-informed, accomplished dentist. He will then discover that knowledge will raise him infinitely superior to his being "a mere tooth carpenter." In addition to this, he must not disregard the dictates of reason and reflection. His doctrines must be based upon good sense and sound philosophy. For a time, at least, he must ignore the egotistical "I am Sir Oracle." These will point out the true mode of investigating the phenomena of nature by unwearied experiments and watchfulness. The mode which Bacon labored to inculcate on the hypothesis-mongers of his age, which Newton successfully pursued, and which has hastened the philosophers of later times to the development of that fund of natural knowledge in the sciences of electricity, chemistry, mechanical, and every branch of natural philosophy by which modern inquiry is distinguished.

THE PATHOLOGY OF THE TEETH; A DELICATE CONSTITUTION! Can the brain of man or the libraries of the world enhance the impressive, comprehensive meaning and bearing contained in this brief sentence? From one extreme, of the light fragile mould of form, the classic-shaped head and lineaments of features, the well-"chiseled," dilating nostril, the fair, soft, smooth, transparent skin, the soft azure eye, sometimes beaming with an unearthly light, the long silken eyelashes, proudly curling, or meek, beauteous lips, pale, or deeply pinked, half concealing a "colonnade of pearls"; the delicate, clear, alabaster complexion, tinged with a roseate hue, the blue tendril veins marbling the temples, the even intelligent forehead; the small hand, with its tapering fingers and filbert-shaped nails, the "little feet," to the other extreme; the high, large, misshaped head, with compressed, flattened temples and large, rounded, projecting, overhanging forehead, with face small in proportion, narrow, deformed chest, flat or hollow at the sides, with projecting breast-bone, small, sharp, or large gray, soft, expressive eyes; tall and thin body, with ill-shaped limbs and large joints, curved spine, pale or white complexion, malshaped, irregular, mottled-colored or chalky-white teeth, large, or heavy, or tumid lips, etc.

A less common combination is a fair-proportioned figure, but with contracted thorax and narrow pelvis; expressive, and, oftentimes, beautiful features, large, soft, languid, or quick and brilliant black eyes, with deep, pearly sclerotica, full-developed vermilion-blooded lips; olive complexion, dark hair, and long black eyelashes; large regular or irregular teeth. The teeth, in their modifications of structure, form, and color, never failing to demonstrate, or rather offering an index exhibiting and marking each individual diathesis. The descriptive lines of Shakspeare say:

"Till forging Nature be condemn'd of treason.
* * * * *
And therefore hath she bribed the destinies
And crossed the curious workmanship of Nature
To mingle beauties with infirmities,
And pure perfection with impure defeature,
Making it subject to the tyranny
Of sad mischance and much misery."

The full development of rounded beauty of the blonde, or that of the brunette, or the diversified features of each, denote the sero-lymphatic temperament, the strumous, the scorbutic, the tuberculous, and the cachectic predispositions. No matter how the physical appearance or how long a time it may represent the body in all the pride and confidence of health and beauty, the tell-tale teeth demonstrate the foundation of the peculiar diathetic characteristic of constitution inherited from parents and ancestors. *Well would it be for suffering humanity if the faculties of medical colleges, all over the world where medical science is taught, knew that this almost exact index exists as a diagnostic and pathognomonic mark of constitutional peculiarity.* Where these teeth are present, it will always be found, upon inquiry, that either on the father's or mother's side some had died of consumption, some of cancerous disease, some of glandular affections, some of malignant diseases, etc.

That *cachectic* predisposition may be fully understood. Its definition is—an "unhealthy" condition of the system. Allied to *anæmia*, it means a diminished quantity of red particles of the blood and its more solid ingredients; or, in other words, serous or watery blood. Its varieties inherited are tuberculous cachexia, cancerous cachexia, the cachexia (debility) of hot climates, marsh cachexia, syphilitic cachexia, and suprarenal (kidney) cachexia, or morbus Addisonii, etc.

The characteristics of the previous group apply to this classification of the fourth group of teeth, with the marked difference that gelatinous tissue predominates over the other constituents of the bone and enamel, bearing the comparative density and hardness with the first two groups as light, soft alabaster is to dense, obdurate granite.

These blue-white pearly teeth and the white teeth form the "colonnade of pearls," the "pearly gems," the "ivory portico," behind "coral lips," upon which the ideal of the poet dwells; forms the lover's eulogy and the novelist's theme of facial expression, which everybody covets as the *beau ideal* of dental perfection and beauty. Unhappily they are the tell-tale signs of the hidden quicksands of danger beneath. They are but one remove from the structure and organization of the soft gelatinous formation of the first dentition, claiming a superiority because of their being larger, thicker, and better outlined and matured into adult feature.

Contrasting with these proverbially beautiful teeth, again we see how nature delights in the trick of producing opposites emanating from the same cause,—constitutional cachectic debility,—*i.e.* delicate constitution. The teeth present a disagreeable expression of lines, large, long, and ill-shaped teeth, and of a dirty, chalky color. The jaws and cheek-bones are hard and angular; large mouth, thick pale cold lips, and sallow complexion; eyes deeply seated within the protruding outline of the orbits, giving an expression as if death were peering through a living mask.

The indented formations in the enamel filled with lime accretions are many, and, unlike the dentings in the previous group, they are more irregular, and in some constitutions the teeth are almost separated into two parts—like the letter X—by a horizontal line of depression encircling each (the molars excepted) several tooth of the whole dental alignement. The cutting edges of the teeth are serrated with points and nodules of a mottled, dirty, chalky enamel. Sometimes these nodules are separated by the horizontal line denting the body of the teeth, the enamel of which presents a yellow-brown, or a white-greenish, uneven, noduled surface of partially crystallized lime. Oftentimes the enamel is entirely deficient upon the crowns of the molar teeth, which, on their masticating surfaces, present numerous small, enamel-discolored, denticulated points, as if artificially inserted into the denuded bone; or otherwise, with uneven, noduled surface. The disfigurement of the enamel is added to by the many malformations and irregularities of these teeth. They are eminently embarrassing to the dentist, as they are the cause of mortification and vexation to the feelings and pride of their possessors.

Their decay, almost at all times spontaneous, is hastened by the accidents of hysteria, chlorosis, epilepsy,—fearfully on the increase,—dyspepsia, gestation, lactation, too much confinement in-doors, alcoholic cachexia, anxiety, grief, overwork, want of proper (suitable) nutritious food, etc., in adults. In children, supermental exertion, studies, absence of *instinctive*, cheerful recreations in the sunshine abroad. In youth, dissipations, smoking, tight-lacing, and, above all, the absence of respiring the Breath of Life in the free, open, pure, nutritive air, which electro-vivifies, oxygenates, and supplies the electro-vital-nervous force to develop and sustain every atom of the animal organization.

In many, the cachectic pathology of the teeth is of a character that the mere examining them superinduces a "nervous" effect, not only upon the mind, but upon the teeth and upon the whole body, causing great prostration, and, in two cases which came under my notice, a state of collapse. To meddle with them is torture; to leave them alone insures their speedy decay. The only method of reaching them is by judicious constitutional and local treatment and rational nursing.

Goldsmith's "Citizen of the World" says, "How foolish it is to be sick, how silly it is to die!" When all we have to do is to read newspaper advertisements, where we can learn how to be healed and live forever. With the advance of the knowledge of natural philosophy, *pro rata* strides are made with philosophic nonsense. Lord Byron dieted on fish, chiefly, believing that fish recuperated his brain with phosphorus derived from this diet; since which time Byron's crochet has been adopted as a physiological truth. We cannot make *red blood* from fish diet, hence Byron had bad teeth, and he died early of debility, relapsing fever, or typhoid—it is the same.

On the south and east end of Long Island cachectic depravity of the blood is actually—though unintentionally—cultivated. This part of the island is manured with fish taken from the neighboring waters. The malaria of phosphorus poisons eliminated from the putrescent land renders the population fishy,—cachectic,—their teeth fishy too, decaying early and rapidly. Fevers are endemic.

The small island on the western side of St. Eustatius—one of the West India Islands—called the isle of *Saba*, was originally peopled by a stalwart, healthy, hardy race of Scots. These people, through each succeeding generation, have subsisted exclusively on fish diet. In these people we have the illustration and demonstration how blood and habit of body may be deteriorated, while the organizations are forever the same, however inferior. In this way the functions of nature may be diversified into individual diathesis, but natural organization cannot be permanently altered, although sometimes we read of monstrosities, and even see "freaks of Nature." The "New Theory in Dental Histology," by S. P. Cutler, M.D., D.D.S., published in the Dental Cosmos, vol. xiii., No. 3, page 121, cannot be sustained in this particular. From the time of Isaac, circumcision has been practiced upon millions upon millions, through a period of nearly four thousand years, or one hundred and seventy generations; yet we find *nature reigns supreme;* and so with the Chinese practice of diminishing the feet for many generations. Bad blood—the result of "sin," of climate, or accident, or whatever it may be—is sometimes inherited; that we know,—it proves nothing more.

The fish-fed *Sabans* present a people of decrepitude, premature old age, scorbutic, and of *leprous* diathesis. Their bodies are hideously disgusting, being covered with desquamating skin in the shape of large scales. Their fingers and toes ulcerate away, joint after joint, leaving mere stumps. Their teeth are thin, clear, gelatinous, and fish-like in every particular, only that they are shaped, featured, and outlined as human teeth. They are affected by all the peculiarities attending tuberculous or scrofulous teeth. It cannot be said of them that they decay. They cave in, "crumble in," or melt away, as a sand-bank is washed

down by soft rains. The act of eating or drinking is their torture, and, finally, when their crowns are wasted away, soft, pasty fangs, of almost diffused nervous matter, with constant neuralgic pains, remain to distress the unfortunate sufferers. The curious phenomenon of atavism is here fully established. Almost in every family the affection has been observed to miss a generation, in which the original good teeth will be present, and the bad teeth surely reappearing in the succeeding one. The people on the opposite land, only eight miles distant, living generously and naturally, possess teeth of the ordinary excellence in common with the generality of the dental organs of other well-developed, well-fed people.

The distinguished cook, Professor Blot, says in a lecture "On Cooking as an Art," delivered at the Cooper Institute, "you cannot make a gentleman by feeding him on codfish;" which may be interpreted, that fishy *white* blood, and a *white liver* are incompatible with the warm manners characterizing the presence of *red* blood. The professor says that "food is the most important of our wants, as we cannot exist without it," which nobody can deny. "If one has mental labor, fish"--shade of Byron!--"should be eaten every other day," AND "fish and cheese are the best articles of diet for children." Persons that cannot swim should not wade beyond their depth. The professor may cook a fish to perfection, or transform a piece of cheese into a Welsh-"rabbit"—rarebit—but he must not blot out our children with such a diet as his cookery recommends. Our children's teeth are fishy and cheesy enough without assisting the *swill* and *condensed* milk diet to increase the ill-definable debility of their dental organs, already sufficiently embarrassing to the professional dentist. A natural diet and a mother's care are demanded to secure health and good teeth. Dr. Willard Parker, our distinguished surgeon, speaking upon the "Reorganization of the New York Infant Asylum," says, "that at an asylum in Montreal, where children were artificially fed, out of 4059 children received in six years, 3767 died, or 93 per cent. At Randall's Island, New York, but ten out of every hundred lived, and where nurses were provided 27½ per cent. lived, and where the *mother* cared for the child full 70 per cent. lived." The great chemist, Liebig, proposed an artificial food for children. It was tried in the Paris hospitals. The result was that children survived on the experiment three and four days only.

Thus it ever will be. The egotism of theorists, based upon scientific ingenuity, leads them into the belief that they can condense nature into the limits of a nutshell; and, while they are imposing upon themselves and leading an "enlightened public" into the most serious of unphilosophical errors, practical experience demonstrates that we cannot violate the mathematical laws of the vital forces of nature without paying a severe penalty. Nor can we govern the dynamics

influencing vitality and organization. All human chemical knowledge *may* propose, but nature *will dispose.*

Dr. J. W. McCormick, M.R.C.S., British army, E. I., describes, in *The Transactions of the Medical and Physical Journal of Calcutta,* many interesting cases of dental affections superinduced by bad diet, exposure, and debility of the stomach, or gastric irritations; and this, too, among the British troops, selected, "picked" men, wherein "puffy, spongy, hemorrhagic, vegetating, painful gums were present, and the teeth 'crumbled away' or perpendicularly split in two."

The gums embracing the teeth in health are thin, compact, and either pale, or of a peach-blossom or a delicate pink-salmon color. In their reverse order they are thick, flabby, tumid, turgescent, spongy, and flaccidly connected with the necks of the teeth. The teeth, too, speedily disintegrate or break off, leaving painful, festering stumps, suppurating gums, and irritable canker ulcers upon the whole mucous membrane of the mouth, and often extending into the throat and bronchial tubes. Mothers during the nursing period frequently suffer much from these tuberculous canker sores.

To what extent the pathological condition of the teeth, in whatever original constitutional diathesis they may be, is affected by vaccine matter or *virus* taken from strumous or scorbutic children, the offspring of phthisical or consumptive parents, and indiscriminately introduced into the systems of children free from hereditary taint in their blood, remains to be demonstrated or disproven—whether the correctness of my hypothesis upon this point be what I deem it to be, the cause of another pathological condition of the teeth.

Internal decay in the first and second groups I have rarely met with; in the gelatinous class of the third group occasionally; but in the classes of this fourth group it is of common occurrence. The internal disease, in fact, is the original defective secretion, deposit, organization, solidification, and imperfect ossification, of the teeth, which are almost cartilaginous in their texture; they present gelatinous matter, saturated, as it were, with solidified lime from a gristly bone solution, and covered with a delicate, translucent, imperfectly-crystallized enamel. In the centre of the substance of these teeth may be seen a deep-seated blue spot like a diminutive bruise spot, which, examined by the aid of the microscope, exhibits tuberculous tissue. We find the germs of malignant disease in the organization of the teeth as well as in the lungs and in other organs of the body. In the case of Mr. ——, one of the editorial staff of the *New York Herald,* who died of what is termed "galloping consumption," the teeth were of surpassing beauty, in size, shape, form, and regularity; but all were affected by this internal, tuberculous, malignant disease. The action of the disease was so rapid, that three weeks from the time of his "taking his death of cold,"

the sockets of the teeth and the gum portions of the jaw-bones were entirely denuded of their investing covering—the gums. They had suppurated and melted away, leaving the livid lips with the terrible expression of a living, grinning skeleton beneath. The majority of the teeth quickly crumbled into pieces or suddenly caved in before his death.

In all anæmic systems the teeth are sympathetically affected by local or constitutional irritation, and the teeth reciprocate the compliment by exciting constitutional and remote symptoms of neuralgic troubles.

The wisdom teeth are nearly always incomplete in constructive organization, and often are little better than agglomerated matter. If any wisdom be furnished by their eruption, the suggestion would be, have them "out" as soon as possible.

THE TEETH! By dentists looked upon as furnishing articles of trade and profit; by their possessors, as ornament, of pearl to complete the perfection of the "human face divine;" by anatomists and physiologists —pathologist, they have none to befriend them,—as necessary mechanical triturating instruments.

THE TEETH! Have they no higher—important as it is—grade than their being mere "grinders" and "incisors?" We have been told, and it has been published too, what a capital thing it is to those afflicted with *"congenital cleft palate,"* that by their malformation they can effectually acquire the *nasal twang* necessary to speak the *French* language with native excellence. But of the physiological character of the teeth, as connected and identified with the vocal powers of enunciation, pronunciation, intonation, emphasis, and modulating and articulating sounds, we have never been told; that the teeth are the great conservators of the lungs, we have never been told; that by their adaptation they permit the breath of life to pass into the lungs by a slow and natural force suitable to the gradual inflation and expansion of the organs of respiration; that they act as a dam, preventing the too sudden emptying of the mouth, and consequently the exhaustive use of too large a column of breath to be expired through the larynx from the lungs at each expiration, or by each act of speaking, thereby preventing repetitions of sudden collapses of the organs of respiration and the consequent exhaustion of the nerves of respiration. In ordinary speaking, reading, singing, preaching, haranguing, the teeth never permit an atom more of breath to be expended from the lungs than is mathematically required to enunciate each separate sound through the aperture of the teeth. By the absence of the teeth, each enunciation of vocal sound causes the breath contained in the mouth to be expended at once, and which is replaced with each renewed enunciation by *per saltum* jerks, as it were, of breath from the lungs—causing a sensation of weakness in the chest, and pain in the side, short

breath, *dyspnœa*, and "dry cough," followed by general exhaustion. Under such circumstances the "old folks" lie down or sit melancholy and moping away in their arm-chair, and the young folks take cod-liver oil and iron, apply plasters and take change of air, *secundum artem.* With infants, crying and "crowing" answers the purpose of speaking, singing, and haranguing, as exercises to the muscles of respiration.

The miseries attending the absence of the teeth from the mouth are often increased by the too frequent and oftentimes unnecessary removal of the tonsils from the "throat;" organs whose physiological intentions are to modify the temperature of the atmosphere inhaled into the lungs, and to protect and warm the *epiglottis* and its *rima-glottidis*, and by their secreted fluid to lubricate the parts forming the entrance into the larynx or windpipe.

During the period of the last forty years I have retained several families, their children and their grandchildren, all differing in constitutional habit of body, whose dental systems have been under my professional supervision and care, which, with the experience derived under similar circumstances among many other families, although of not so long duration of time, yet still of sufficient lengths of periods to enable me to recognize analogous pathological conditions of the teeth, and to analyze the cause of their differences under the several peculiar adverse constitutional circumstances distinguishing them. By these fortunate circumstances I am enabled to throw my observations together in the condensed form of these "notes." I deem their accuracy to be of sufficient importance to offer them to my professional brethren as a guide, or a starting-point, for us to unite in the one object of pursuing the subject to its complete development; that, by our united experience and observations, we may ultimately secure a perfect dental science, and the distinguished position that such a science has the right to demand among the practitioners and professors of the healing art.

From my long practical experience, the gratification of my professional pride is being able to state that in the several families in which I have been professionally retained for so many years, *I have filled as few teeth as possible.* This practice has not been *profitable financially*, but it is conservative, and above all it is professional. I have relied upon constitutional and conservative treatment, which have been the means of conserving the teeth to their owners for much longer periods than would *too much* mechanical officiousness in filling natural fissures that rarely ever decay.

Of the very many cases treated constitutionally with success, the following will point a moral and adorn my history:

Miss ——, a beautiful young lady, aged twenty years, of sero-lymphatic temperament, and constitutionally anæmic, was placed under my professional care at the age of ten years. Her teeth were soft, full of in-

dentations, and were covered with a mottled-colored, yellow-brown, muddy accretion of lime enamel. I furnished her with a special dentifrice, for the purpose of rubbing away this disfiguring surface of the teeth, hoping to come to a substratum of good enamel. I did not fail to impress upon her mind that continued good health—for the weakly can be "healthy"—was necessary to effect the success of our undertaking, which must be assisted by her own constant attention, and by persistently observing the directions given to her, when, *perhaps*, "after five years or so," a good enamel might be exposed. She was an intelgent child, and ambitious. Aided by the constant watching of her constitutional health by the family physician, the distinguished Dr. Gesheidt, our efforts were crowned with complete success. If there was ever a case of abnormal condition, where nature, untiring and persistent personal attention and professional honesty, deserved credit and unqualified recognition for its complete success, our united efforts claimed and deserved it.

Here we have a perfect illustration how anæmic teeth, in delicate constitutions, may be conserved by judicious constitutional care, local treatment, and strict attention.

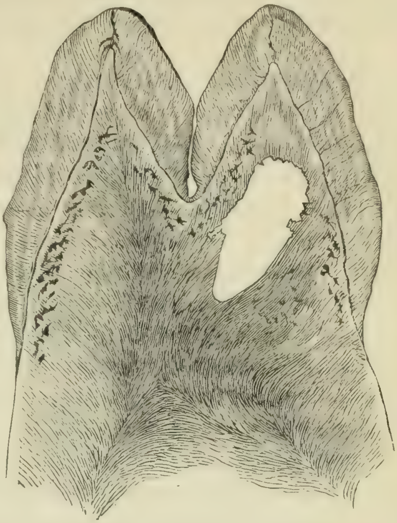
MICROSCOPICAL FISSURES IN THE MASTICATING SURFACE OF MOLARS AND BICUSPIDS.

BY J. H. M'QUILLEN, M.D., D.D.S.,
PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

In a previous communication attention was directed to the fact that the minute openings or fissures found in the grinding approximal, buccal, palatine, and lingual surfaces of molars and bicuspids frequently lead to cavities of some size. Through the kindness of my friend, Dr. R. W. Varney, of New York, who placed in my hands some time since a number of microscopical preparations, I have an opportunity of demonstrating in the most conclusive manner the necessity of immediate attention to such cases.

In the accompanying illustration (which I had made of a longitudinal section of an inferior molar, as seen under an $\frac{8}{10}$ objective and No. 1 eye-piece, magnifying sixty diameters) it will be observed that a minute fissure, invisible to the naked eye in the section, extends from the bottom of the sulcus on the grinding surface of the tooth, through the enamel, almost to the dentine, and enlarging at the lower part into an oval cavity. This is entirely the result of defective formation, the enamel prisms having failed to coalesce at that point, and thus a condition is presented favorable to the retention of fluids and semi-solids, which undergoing decomposition would speedily destroy the thin septum of enamel covering the dentine. In the latter tissue, closely contiguous

to the enamel, a number of black spaces (the *interglobular spaces*) will be seen. Here again is located defective structure and a prolific predisposing cause of decay. The large space represents a carious cavity commencing on the approximal side of the tooth.



In a paper read before the American Dental Association at the meeting held in Boston, August, 1866,* giving the results of a personal examination of the *interglobular spaces*, I remarked, "As evidence of the practical bearings of these investigations, it may be well to direct attention to the fact that the existence of the spaces in teeth which have completed their growth must be regarded as an *abnormal condition*, predisposing such teeth to decay, and that when either by mechanical action, as by a fall or blow, or by the penetration of external caries, such spaces are reached, the *disease here would run riot;* hence the importance of care on the part of patients and operators to have the most minute cavities filled; for though reached only through a microscopical opening, the result would be the same, while, if protected from the action of external influences or the *exciting causes of decay*, this *predisposition* might remain dormant for a lifetime, as is sometimes the case with other diseases."

With no disposition to revive a useless discussion, or to dwell upon the very unreasonable, not to say absurd, objections and denials which were offered to the communication by doubtless well-meaning but mistaken men, at the same time I cannot but regret that they influenced the opinions of others who, reposing implicit faith in their acuteness and judgment, very naturally regarded the objections as of a valid character, until an opportunity for observation convinced them to the contrary. Such was the case with the gentleman who handed to me the specimen under consideration.

It is to be hoped that the illustration offered will teach a valuable lesson to those who have been in the habit of dismissing their patients with the statement that "there are some small cavities in the teeth which can be left without disadvantage until another time." It also shows most clearly the necessity of following up the fissures, which generally extend from a central cavity of decay in the grinding surfaces

* DENTAL COSMOS, vol. viii. p. 113.

of molars; careless operators contenting themselves with only removing the caries from the central cavity, leave these fissures untouched, and, as a consequence, decay progresses unobstructed and unnoticed, until the tooth is rendered a mere shell.

A SUGGESTION.

BY J. S. LATIMER, D.D.S., NEW YORK.

FREQUENTLY we hear from the lips of truth-loving men of our profession the assurance that they love their beneficent calling, and would gladly do all in their power to advance it to the high position to which it aspires. Such noble promptings are from men's better nature, and should be encouraged. No man ever performed a good act, cherished a noble desire, or denied to his lower nature some seeming good for the benefit of the higher, without being made a better and a happier man.

To those who, however poor and humble, appreciate these facts I have a suggestion to make.

You admit your indebtedness to more than a score of men who, through the schools, societies, and journals, have given you, often for less than the asking, the facts, principles, processes—wrought out with infinite pains and labor—on which your professional usefulness and success so largely depend.

No man of us, however talented, can say he is not a debtor to all who have contributed to swell the sum of useful knowledge.

You admit, too, that "no man liveth to himself"—that only the more brutish of mankind fail to recognize this fact. Every truly noble soul admires and emulates the example of One who, though King of kings and Lord of lords, nevertheless denied Himself and lived and died for others.

You and I have regretted the shortcomings of our dental schools, and we are agreed that until they are suitably endowed and placed beyond the necessity from which arises the temptation to accept all sorts of material and to be too lax in the requirements for graduation, they can be little better.

Those of us who know that not a dental college in the country pays expenses—that to accept a professorship in any one of them requires that a man shall sacrifice time and money and health without a monetary return, generally without any other compensation than that which arises from the knowledge of noble, manly sacrifices made for the common good, will not lay the shortcomings of our schools to the charge of their professors. They are all they can be with the means at their command, and we are proud of them; but we must make them better. We can do it.

Poor men and those in medium circumstances are apt to say, "Yes,

I know that A and B and C ought to endow the schools; ought to be benefactors; but as for me, I am too poor; I shall have only enough to keep my wife and little ones from want." This is bad philosophy, because it robs us of the ennobling sense of benefaction, and deprives the world of many a benefactor.

Impressed with this idea, a friend of mine set to work to do what he could, and I propose to tell you his plan. He is poor, has always been poor, and expects to die poor, and yet he proposes to contribute his mite toward making the schools independent of the price of pupilage, and so more efficient.

He has taken out several policies on his life, which, with the little already saved by strict economy, will amount to a sum, the interest on which, at seven per cent., will give an income of one thousand dollars a year. Not a large sum, to be sure, but sufficient to keep his little family from want. As no income can be had from this source until at least twelve months after his demise, he has taken out an extra policy of one thousand dollars in his wife's name; this will be her immediate help. The other policies are in his own name, so as to be controlled by his will. The law of the State of New York is such that no person can control his estate by will beyond two lives; and it will be seen in the following clauses from my friend's will how the legal difficulty was overcome.

He has now a wife and one child. The will is comprised in seven articles; the first of which provides for expenses of burial and for the payment of debts; the second disposes of the private property, and article third bequeaths all the remainder of the estate to his executors in trust for the benefit of his wife and child during their natural lives. Article fourth reads as follows:

"Upon the death of the survivor of my wife and child, I give and bequeath the said principal sum and all the then residue and remainder of my estate to the Philadelphia Dental College (of Philadelphia, Pennsylvania), upon condition that they continue to put out the same at interest and keep the same securely invested, and that within a reasonable and convenient time (not to exceed one year after said fund shall be available to them for the purpose) they establish in their college a professorship of 'Experimental Physiology and Dental Hygiene,' and that they appoint and continue a professor of competent learning who shall give proper lectures and instruction therein, applying the income only of said fund to the maintenance of such professorship.

"In case the Philadelphia Dental College shall refuse, neglect, or be incompetent to accept the said bequest upon the conditions aforesaid; or in case of a breach of said conditions, or any thereof, at any time; or in case, by reason of any legal or other impediment, said bequest shall fail to take effect, I then give and bequeath the same to the Penn-

sylvania College of Dental Surgery, or to the Ohio College of Dental Surgery (of Cincinnati), or to the Baltimore College of Dental Surgery (of Baltimore, Maryland), whichever of them (having preference in the order named) shall accept such bequest upon the said conditions, in like manner as if named in the stead of the Philadelphia Dental College in the foregoing provisions, wherever the latter name occurs."

Articles fifth and sixth, which are too long for the pages of the DENTAL COSMOS, are so arranged as to get over the legal difficulty in the way, should the testator be blessed with other children, by giving absolutely, at the demise of the eldest two of them, to each child his or her share, which share is to be determined by dividing the property into as many shares as there shall be children at the time of the testator's death, the balance to go to the college.

This plan has several meritorious points, among which are the following: it gives the assurance that no bad investment nor any claims against the widow or her offspring can deprive them of a living, as might be the case if they had sole control of the principal sum; and secondly, it gives to the man who has, by self-denial and frugality, saved something, and thus obeyed the injunction to provide for his household, the control of those savings. So, living or dead, his good work goes on.

Believing the example of my friend worthy of being followed, and desirous of seeing every college in the country handsomely endowed, I shall take pleasure in giving to any who desire all the assistance necessary for the accomplishment of their good designs.

To those of our profession who have been favored with ample means, I would say that there is no direction in which you could invest a certain portion of your surplus gains to more advantage than by endowing a chair in a dental college. You could do this at little or no personal sacrifice, and enjoy the consciousness of giving that material aid which is so necessary in conducting educational effort; and thereby afford enlarged opportunities of acquiring knowledge to those entering the profession, not only in your own day, but long after you have passed from this earth.

METHODS OF CONSOLIDATING GOLD FILLINGS.

BY S. G. PERRY, D.D.S., NEW YORK.

Read before the New York Odontological Society, April 18, 1871.

IN considering the consolidation of gold, I shall be obliged to give some attention to the preparation of cavities and to the kind of gold used. Without discussing the principles involved or considering the methods adopted by others, I can only give the conclusions at which I have arrived through my own experience. Perhaps this can be done in fewest words by a simple description of my own method.

The *best* operations I ever performed were made with adhesive gold, packed with small-pointed, finely-serrated, nearly straight instruments, in cavities easy of access, free from under-cuts, and in teeth around which the rubber dam could be used. Here, then, I have a criterion. If their perfection was due to nearly parallel walls, straight instruments, adhesive gold, and the rubber dam, then all other operations, when possible, must be performed in the same manner. This I accept as a general rule, though such a great variety of cavities occur that it will not do to generalize too freely.

What I most desire from gold is *strength* and *adaptability*. Strength I get from adhesive gold, and adaptability by cavities prepared to admit the use of nearly straight pluggers, and—backache! The strain upon the nervous system in packing adhesive gold is enormous, but I know of no "royal road" to permanent success of any kind. The gist of what I can say, then, on this subject of the consolidation of gold is, *small-pointed, nearly straight instruments, and the lead mallet in my own hands.* This for all cavities, large or small, when the rubber dam can be used; and it can nearly always be applied to all except the wisdom teeth,—and sometimes the second molars before the wisdom teeth are erupted,—and in most cavities anterior to the second molars straight instruments can be used. I use the mallet myself that I may better control the force of the blow and better conduct the operation generally. Particularly do I find this true in contour fillings.

In packing gold by this method, of course I prepare my cavity with it in view.

I first decide from which side or from what direction I will fill, and then cut from that direction, as much as possible, with nearly straight chisels, so that when ready for filling, a straight plugger will reach every part of the cavity.

In approximal cavities of the incisors, for instance, I was taught, when a student, to pay little attention to the shape of the cervical wall, but to depend on the lateral walls and distal extremity for support. I reverse this now entirely. I leave no retaining-point at the distal extremity of the cavity, unless it is unavoidably so shaped by decay, and I can fill it with a straight instrument and mallet. I want the support for my filling in the base of the cavity, and along the lateral walls for a little distance from the base. With this in view, I excavate at the cervical wall until I get a firm foundation, leaving, if possible, no under-cut at the distal extremity, nor under the lateral walls for some distance from the distal extremity. At the base I excavate in conformity with the naturally oval outline of the cavity, or I cut the base at right angles with the lateral walls, as may seem best. In either case I drill a small retaining-point in the most acute angle of the base. This I do that I may mallet the first piece of gold firmly in the place where

it belongs. Then, having both hands at liberty, I can carefully mallet every mat of gold that goes into the cavity. Proceeding in this way, I feel more sure of the foundation than by holding the first few mats in place and using only hand-pressure. These retaining-points are small, and are intended to give support to the gold only during the process of filling, and not to the plug at large after the operation is completed.

A cavity prepared in this manner can, of course, be filled with a single straight instrument, and the gold be consolidated entirely from one direction.

In packing the gold, I hold the plugger in the left hand (which I seldom move from its support on the patient's face or chin), and alternately introduce the gold, and use the mallet with the right. The gold I anneal, if necessary, and convey to its place in the cavity on the point of a small instrument used as a spear, or by delicately-pointed pliers. The points of our ordinary pliers are too large,—they rapidly absorb the heat from the flame and cause the gold to be unevenly annealed. Retaining this heat, they cause pain in applying the gold.

I pack the gold as full as I desire it to be, while going on with the operation, so that the last mat is put on at the distal extremity of the cavity. The foot-shaped instruments I use only for condensing the surface and margins, either during the process of filling or after the gold is all introduced. The burnisher I seldom use except at the margins—never after the file and stone. If the gold is not condensed by the plugger so as to file or stone down perfectly smooth and free from pits or flaws, the burnisher cannot remedy its defects.

In approximal cavities in the incisors, when strength is not desired, I use gold No. 5, soft (it is called soft, and yet is sufficiently adhesive to pack well), No. 4, adhesive, and Nos. 20 to 60, rolled. This latter I use a great deal, though not so much as formerly, having learned from a pretty thorough trial where I can and where I cannot use it to advantage. The low numbers I fold in ribbons and cut to suit the case.

I fill in this manner all cavities that can be protected by the rubber dam, and that are sufficiently in the anterior part of the mouth to allow the use of straight instruments. Such parts of approximal cavities in the bicuspids and molars as cannot be easily reached by such instruments, I fill with pluggers bent at nearly a right angle, using the mouth-glass and hand-pressure.

The *exceptions* to this method are approximal cavities in the incisors, already so badly decayed as to render it impossible to prepare them without under-cuts that extend under thin walls; approximal cavities of the same kind in the bicuspids, and very often cavities in the grinding surfaces of molars and bicuspids, having small openings, and yet showing considerable decay interiorly. Such cavities I excavate thoroughly, and fill with oxychloride—more recently with Guillois' cement. After

it has set, I cut portions of it away, shaping the cavity as if decay had never gone beyond its margins, and fill with adhesive gold, packed, as before described, with straight instruments and the mallet.

This, I suppose, will not be considered quite "orthodox" by some members of the profession,—especially those who are in the habit of using non-adhesive gold in cavities in the grinding surface. But, if oxychloride can be left in a cavity where it has been put as a capping for an exposed pulp, why may it not be left in any part of any cavity where a straight plugger will not reach? That it will prevent decay we all very well know, and when protected from the action of the fluids of the mouth it seems to me to be the best material with which such cavities may be filled. It has also the advantage of being a non-conductor, so that nearly exposed pulps must be less endangered.

If oxychloride is too white to put under the enamel of incisors, Guillois' cement is darker and less objectionable than the yellow color of gold, and not so liable to discolor.

When the rubber dam cannot be used, and the operation must be performed quickly to avoid the fluids of the mouth, I know of nothing better than sponge in approximal, and soft gold in grinding surface cavities, introduced and condensed by hand-pressure, aided, if possible, by the mallet. Operating as I do without an assistant, in such cases I use Salmon's automatic, the points being finely serrated, and patterned after those I use with the lead-mallet, though somewhat larger. Such fillings are generally unsatisfactory, though of course better than none at all. I formerly operated almost entirely with the automatic, but found it having too much lateral motion, too liable to check the teeth from the sharpness of its blow, and not so obedient to the brain as one's own hand. In fact, it is *too* automatic.

Using oxychloride in badly-shaped, inaccessible cavities, it is unnecessary for me to say that I very seldom use cylinders.

ASSOCIATIONS AND IMPROVEMENTS.

BY R. S. WHALEY, NEWBERRY, S. C.

Address delivered before the South Carolina State Dental Association.

THE principles of association are so obvious as to need but little comment or explanation. History proves conclusively the power of combinations. In no previous age have associations progressed so rapidly and taken so deep a hold upon the public mind. Men have learned what wonders can be accomplished in certain cases of union, and seem to think that union is competent to anything. You can scarcely name an object for which some institution has not been formed. Would men spread one set of opinions and crush another,

they make a society. Would they improve the penal code or relieve poor debtors, they make societies. Would they encourage agriculture or manufactures or science, they make societies. We have numerous institutions spreading over the country combining hosts for particular purposes. We have minute ramifications of these societies penetrating everywhere, and converging resources from the domestic, the laborer, and even the child, to the central treasury.

Association, unity, and harmony have ever proved a most formidable bulwark to civil and religious liberty, as well as developed improvement in the scientific and intellectual world, raising societies from heathenish darkness into the broad open sunlight of progressive development.

If the interest and dignity of a profession, and its standard of excellence, are to be elevated, it is most important that a laudable emulation be encouraged among its members, to incite them to an earnest inquiry and a progressive individual energy. These are the elements of improvement and success. A cordial cultivation of the higher powers of the mind and the nobler impulses of the heart, through an intimate acquaintance and friendship of the members of our profession one with another, as is the binding of associations, is the surest method of opening the way to dignity and manhood.

The first step toward such a movement, the mere desire to incite in such an enterprise, is of itself the exercise of an energy in the direction of that noble endowment of the heart which does not only make us better members of our profession, but better citizens and more useful members of society.

Professions are not made, they grow. They may be characterized as creatures of circumstances and conditions, and require nutrition of substantial character to secure their development just as much as the growth of a vital organism would.

As with other professions, so with ours. There must be and has been a progressive exercise of the elements of growth and development in order to establish an energetic and hopeful status.

But a year ago we assembled together—a handful in number—and formed this association. Although we did not at the time, and do not yet, number all in the State, yet we have made an advance, and laid the germ from which a regular growth will rise and grow that eventually will embrace the entire profession.

This combination or association combines almost every element of improvement, inculcating and teaching a high-toned social code, as well as an honorable ambition that will prompt members of the dental profession to render themselves well acquainted with and to become skillful in their professional pursuits.

This organization was not prompted by any sinister motives. It was not forced into existence by a few narrow-minded individuals; it

was not set on foot for selfish purposes or individual preferment; there were no dreams of future greatness being thrust upon any one who was not competent to bear such distinction or willing to receive it; it was the result, allow me, gentlemen, to remark here, of a generous outburst of the progressive energies of a profession which was big with the spirit and enterprise of the age, and the vitality which characterizes it yet is the best evidence that it was born to live.

This social and scientific compact will soon embrace the best talent in the dental profession to be found in this State.

With the talent and the energy that will be thrown into the enterprise, we fully expect not only that the State Dental Society will prove to be a success, but that it will be a triumphant vindication of all that has ever been said about the benefits and results accruing from the formation of combinations or societies.

GUILLOIS' CEMENT.

BY L. N. HUTCHINSON, BIG RAPIDS, MICH.

I HAVE now used this cement about two months, and I can hardly express my satisfaction in my experiments with it, even in so short a time. I have all confidence that it (or something similar) will supersede all metallic fillings, and be an introduction of a new *era* in saving decayed dentine; it seems to have all the qualifications requisite. First, it is a non-conductor of thermal change. Second, it adheres like glue to dentine, cementing itself to it air- and water-tight. Third, it will not wash (even if contoured) when once set, and is sufficiently hard for all practical purposes. Fourth, it can be formed or mixed the color, or nearly so, of any tooth, and is susceptible to quite a polish,—so much so that, in the wet condition the teeth are always in, it is hard to detect the mending. This last is a very important qualification; then we can bid farewell to shining gold in the mouth, which has no beauty in it for me. I am quite satisfied to imitate nature.

I have taken the most sensitive cavities I could find, and, after cleansing and saturating them well with creasote, have applied the cement—and I must say with happy results so far; without one failure. My experience in applying the cement to sensitive dentine causes it to ache slightly, but it dies away with the moisture of the cement; the soreness leaves, if any, and the tooth becomes well to all appearances. All my patients that have tried it express extreme satisfaction; some, that have experienced the sensation of metallic substances, claim that this is much superior in feeling, comfort, and appearance. What further experience may prove I cannot tell, but I imagine no more sensitive teeth after filling, or fillings getting loose, turning black, and falling out. It has

always been a mystery to me how metallic substances in decayed dentine have done so well.

I have used other osteoplastics with success, except their washing and color; but this Guillois' cement obviates these objections, as far as my experience goes—and I have observed very closely, for I have been anxiously looking for a better substance for filling and saving teeth.

CHLORIDE OF ALUMINIUM, AND ITS USES IN DENTISTRY.

BY W. S. ELLIOTT, D.D.S., GOSHEN, N. Y.

THE article named in the above caption is a comparatively new chemical preparation, and is presented to the medical world as a convenient and useful disinfectant and antiseptic.

The writer desires to call the attention of the profession to its use in dentistry.

Whenever occasion has presented itself for the treatment of periodontitis occasioned by disintegrated and offensive pulp tissue, the disease has been speedily brought under control by the employment of the liquid preparation of the chloride of aluminium, in connection with such other topical and constitutional remedies as is usual in such cases.

The article is better than creasote, carbolic acid, or chloride of zinc for the injection of the pulp cavity, in so much as it is non-irritating and innocuous. It will not cauterize; therefore will not injure the lips or tongue, should it accidentally get upon them. It seems to be more efficient than chlorinate of soda, and in no respect is it offensive to the patient. The taste is sharply saline, being not unlike that of alum.

Further experience will prove its efficacy in the treatment of pronounced abscess, caries, diseased gums, etc. It possesses styptic and astringent properties; therefore it is fair to infer that its range of usefulness will be greatly enhanced.

The *Lancet* (August 27, 1870) says of this preparation: "It is quite as potent as chloride of zinc or carbolic acid, and is at the same time non-poisonous and devoid of unpleasant smell of every kind. These qualities will, no doubt, insure its being extensively used, and at no distant date we may expect it to displace the antiseptics which are at present in vogue."

The *British Medical Journal* says: "This agent most closely approximates chloride of zinc, which, like it, is specially potent against organic ammonias."

A preparation of chloride of aluminium *wool* is announced, which, however, at this date, has not been imported, or at least is not in the market. It is believed that this will also become useful in treating pulp cavities, since the salt with which the wool is combined is excessively greedy of moisture, and therefore would invite to itself the deleterious and pent-up fluids of the dental canal.

SORE MOUTHS FROM WEARING RUBBER PLATES.

BY M. P. BEECHER, NEW YORK.

In a recent number of the Dental Cosmos I noticed an article by Dr. H. F. Douglas, in which he inquires if rubber is poisonous. I think it is, but have a different method of treating such cases as the doctor refers to, viz., sore and ulcerated mouth from the wearing of rubber plates; nor can I concur with him that a plate ought to be polished next to the palate. I take a plaster impression, to get a facsimile of the parts to be fitted; and when the palatine surface is polished, lose so much of the fit, and, as rubber is a non-conductor, it can scarcely be overcome by simply polishing the inner surface of the plate. There is wanted some metallic surface as a conductor of the heat, and my method of procuring that is as follows: having my case ready to pack, I varnish the cast with collodion; then lay a sheet of *gold foil* on it; after which I proceed to pack in the usual manner. After vulcanizing the foil will adhere to the plate.

Again, I cannot coincide with the doctor in regard to his views of the light rubber. It must be evident to every practitioner that excess of mercury as a coloring base cannot be otherwise than detrimental, as the dark rubber contains less of the coloring ingredients, being *red sulphuret of mercury* or vermilion. I do not suggest these ideas as new, but have tried the plan in a number of cases such as the doctor refers to, with marked success; therefore communicate it for the benefit of the profession.

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

The eighth annual meeting of this society was held Wednesday, May 3d, 1871, in the Philadelphia Dental College building, the President, Prof. McQuillen, in the chair.

The meeting being a business meeting, and the only one set apart for that purpose by the constitution during the year, there were no essays or discussion; but a number of interesting specimens of antique dentistry, consisting of partial sets of teeth carved from the tusks of the hippopotamus, were exhibited to the society by the president. They had been presented to him by Dr. A. Reynolds, of Columbus, Mississippi.

Dr. Boice, the recording secretary, reported that there had been nine stated and one special meeting during the past year; essays were read and discussions entered into at all of the meetings. Donations to the society had been larger and more valuable than any previous year.

Membership of the society, 113, of which 51 were active, 46 corresponding, and 16 honorary.

The following officers were elected for the ensuing year: President, Prof. Thomas C. Stellwagen; first Vice-President, Dr. Louis Jack; second Vice-President, Dr. J. L. Eisenbrey; Corresponding Secretary, Dr. Wilbur F. Litch; Recording Secretary, Dr. Alonzo Boice; Treasurer, Dr. W. H. Trueman; Librarian, Dr. E. H. Neall; Curator, Dr. S. S. Nones; Executive Committee, Drs. Charles E. Pike, C. M. Curtis, and W. C. Head.

The following gentlemen were elected delegates to the American Dental Association: Drs. J. H. McQuillen, Louis Jack, Alonzo Boice, Thomas C. Stellwagen, C. A. Kingsbury, J. L. Eisenbrey, S. S. Nones, J. L. Suesserott, and W. A. Breen.

Delegates to the Pennsylvania State Dental Society: Drs. Wilbur F. Litch, Charles J. Essig, J. L. Eisenbrey, Charles E. Pike, D. D. Smith, E. H. Neall, W. H. Trueman, and C. A. Kingsbury.

Dr. McQuillen, the retiring president, said that in declining re-election to the position which he had been honored with for three successive years, he was prompted by a due regard for the interests of the organization, which he believed could be best promoted by periodical changes of the incumbents of the various offices. He congratulated the members upon the selection of his able and talented successor.

The work accomplished during the past year had been creditable to the society and useful to the members, if not to the profession at large. To maintain the reputation established by the society it was necessary that the number of *workers* should be increased, and he naturally looked to the young men surrounding him as those who could be confidently relied upon to take an active part in the efforts of the coming and future years. Let not the suggestions of the indolent on the one hand, or the money-grasping on the other, that "such efforts do not pay," turn any one from the good work. Speaking from an experience of nearly twenty-five years, he could truly say that time and labor expended in such directions proved largely remunerative in securing the respect of the profession and the confidence of the community.

In addition to skillful operators, careful observers and logical reasoners are needed in the profession to give a proper status to it. Such men are not of rapid growth, but demand years of preliminary training to fit them for their work. Recognizing these facts, the Odontographic Society should stand boldly forth and demand the enactment of laws making a thorough collegiate education *compulsory* upon all who propose to enter hereafter upon the practice of dentistry. All legislation short of this would prove of little moment in advancing the interests of the profession or promoting the cause of education.

NEW YORK ODONTOLOGICAL SOCIETY.

THE society met April 18th, the President, Dr. Francis, in the chair.

Dr. Clowes, in reporting on "Operative Dentistry," thought failure in grinding surface cavities due to imperfect excavation of fissure extremities; thought too much attention given to the centre of cavities, and too little to the extremities of fissures; spoke of a peculiar species of hard tartar that he sometimes finds on the roots of teeth; called it alveolar calculus, and thought it deposited from the membrane lining the socket; could not conceive of its coming from any other source; thought there would always be found evidences of salivation where it exists. In approximal cavities he separates with the file, mostly on the inner side and in a concave manner, forming what he calls an approximal arch; always separates with the file, and sometimes builds gold out at the apex of the arch near the gum in such a way as to keep the teeth apart; considered the wisdom teeth among the best in the mouth; thought they had fewer weak points than the other molars; said the first molars were quickly formed and quickly lost, whereas the wisdom teeth are longest forming and can be longest kept; thought their loss generally due to lack of care; extracts the first molars when the second ones come in; considers them the worst teeth in the mouth; in filling, uses adhesive gold exclusively; spoke of the defects of approximal fillings at the base, and considered it as probably due to soft foil. In such cases cuts out the softened portions, and fills with amalgam, leaving the firm part of the gold standing; thought not the slightest harm could come from putting gold and amalgam in contact. As to dental instruments, he thought them poorly tempered; considered it a great fault, and asked if there was no talent in the profession that could produce a good instrument.

Dr. Bronson thought there was much truth in Dr. Clowes' remarks in reference to instruments; could not get from the depots such as he desired, therefore tempered his own; does this by plunging in sperm oil and lamp-black; used lamp-black to make the oil thick.

Under the head of "Incidents of Office Practice," Dr. Bogue, referring to Dr. Clowes' advocacy of the superiority of the wisdom teeth, spoke of the well-known effects upon the teeth of early cutaneous diseases, as measles, scarlatina, etc., and thought that the wisdom teeth, being more slowly developed, and running the gauntlet of a larger number of these diseases, would often be injuriously affected by them. Referring to the extraction of the first molars, he said that vocalists never reach a high degree of eminence if the teeth are not all retained and the arch kept perfect. As regards what Dr. Clowes calls "alveolar calculus," he does not recognize the lining membrane of the socket as capable of secreting calcific matter. He related a case of a young lady

whose teeth had been filled and refilled by a fine operator, and yet decay constantly appeared around the approximal fillings. Had never had just such a case, except one ten or twelve years before. Believing it impossible to save them by filling, he chiseled the approximal surfaces on the lingual side, in accordance with Dr. Arthur's method, so that the brush and tongue would keep them clean. In cases like this he thought it well to consider this method of separation, as compared with that of restoration by filling. He thought our Maker knew how many teeth to put in the mouth, and what shapes they ought to assume; but, at the same time, whether in accordance with the Darwinian hypothesis or not, he was aware that modern civilization had done much in changing the shape as well as structure of the teeth, and thought we should, while considering the ideal shape of a strong tooth, which *could* be restored, also bear in mind that of a frail one, which might not bear restoration. Between these extremes he thought there existed all varieties, demanding the exercise of an educated judgment in their treatment.

Dr. S. G. Perry read a paper on "Methods of Consolidating Gold Fillings." See page 304. C. F. Ives, *Recording Secretary.*

MAINE DENTAL SOCIETY.

The fifth semi-annual session was held at Brunswick, February 21st and 22d, 1871. The profession of Maine was largely represented.

"Rubber Plate Poisoning," a subject which has excited the public mind by articles condemning rubber, published in the various journals in the State, was taken up. Each gentleman rendered his experience and observation. The summary conclusions were—that the percentage of inflamed mouths is not so great as when silver was used, and a little larger than gold produces; that most of the cases are *local*, and due to lack of thermal change in rubber and to ill adaptation; that strong atmospheric pressure, gained by flexible edges, ridges, and deep chambers, is a productive cause and an injurious fit; that an idiosyncratic patient very susceptible to the influence of mercury, which is generally the result of a mercurial treatment, may be constitutionally affected by wearing the red rubber, and it may be corrected by the use of black rubber, which is superior in strength, and does not possess the objectionable properties of the red; and the choice of color of the plate in any case is but very little advantage, excepting when exposed to view.

The propriety of capping the pulps of teeth with oxychloride of zinc was discussed, and the general opinion was that, on account of its antiseptic properties and its non-conductibility, it may be successfully used in teeth with slightly exposed pulps which have not ached, if carefully manipulated, and the teeth have received proper treatment; also when the pulp has only a thin lamina of dentine over it, to cover, as a protection,

with oxychloride of zinc previous to filling; further than that, like all remedies heretofore used, it failed to save the pulp; that it frequently causes much pain, sometimes of several hours' or days' duration; that although there may be no after-trouble, and the teeth usually retained a lifelike appearance, upon examination the teeth will be found dead, the pulp being generally atrophied and the canals dry. On account of these conditions, it was suggested that the use of oxychloride of zinc might be the best practice to try and save the pulp, and if it failed as a preservative, that, perhaps, it might be the best devitalizer.

Subjects of a minor character were also discussed. Numerous specimens were presented. Among them, worthy of mention, was a case by Dr. Henry Leavitt, of Skowhegan, who exhibited a plaster cast of the upper jaw of a miss, aged fifteen, which he had under treatment. Dr. Leavitt proposes to restore the mouth to its normal shape.

A clinic was held in the presence of the society by Dr. A. H. Chamberlain, of Augusta, who inserted a contour gold filling in the mesial side of a superior central.

The following resolutions were adopted:

Resolved, That Dr. D. S. Grandin, of Brunswick, an active member of the society, and a practitioner of dentistry since 1828, now retiring from practice, be made an honorary member.

Resolved, That the President, at discretion, appoint delegates to the American Dental Association.

Resolved, To hold the annual meeting in Lewiston.

Dr. Thomas Fillebrown, President, to deliver the annual address. Drs. Roberts, Chamberlain, and Reed, essayists.

E. J. Roberts, D.D.S., *Secretary.*

SOUTH CAROLINA STATE DENTAL ASSOCIATION.

At the anniversary meeting of the South Carolina State Dental Association, held in Charleston, on the 10th, 11th, and 12th April, 1871, the following gentlemen were elected officers for the ensuing year: President, William C. Wardlaw, Abbeville; first Vice-President, Thomas T. Moore, Columbia; second Vice-President, B. A. Muckenfuss, Charleston; Corresponding Secretary, Theodore F. Chupein, Charleston; Recording Secretary, O. J. Bond, Marion; Treasurer, W. S. Bunn, Charleston. Theodore F. Chupein, *Corresponding Secretary.*

WISCONSIN STATE DENTAL SOCIETY.

The next semi-annual meeting of this society will be held in Temperance Hall, in the city of La Crosse, commencing at 9 A.M., Tuesday, July 11th, 1871.

Dentists from other States are cordially invited to be present and participate in the discussions. Edgar Palmer, *Chair'n Ex. Com.*

KANSAS STATE DENTAL SOCIETY.

The dentists of Kansas met in convention on the 2d of May, 1871, and organized a State Dental Society.

A permanent organization was effected. The code of ethics adopted was that of the American Dental Association, and the Constitution and By-Laws that of standard dental societies in other States.

Dr. J. B. Wheeler was elected President; Dr. W. H. Marvin, Vice-President; J. D. Patterson, Recording Secretary; Dr. E. C. Fuller, Corresponding Secretary; and Dr. J. H. Sawyer, Treasurer.

Dr. Fuller was elected delegate to the American Dental Association for 1871.

A vote of thanks was tendered to Dr. Marvin, for his enterprise in inaugurating the movement for organization.

The first semi-annual meeting will be held at Topeka, commencing on September 12th, 1871. Annual meeting at Atchison, May 2d, 1872.

When all necessary business had been transacted, an irregular discussion ensued, being an exchange of opinions on dental subjects.

After the transaction of some business of minor importance, the society adjourned to meet at Topeka, on the twelfth of September next.

J. D. Patterson, *Recording Secretary.*

HARRIS DENTAL ASSOCIATION.

The fourth annual meeting of the Harris Dental Association of Lancaster City and County was held May 4th, 1871, at the office of Dr. S. Welchens, Lancaster City.

The following named gentlemen were elected officers for the ensuing year: President, Dr. J. A. Martin; Vice-President, Dr. M. H. Webb; Secretary, Dr. Wm. Nichols Amer; Treasurer, Dr. J. G. Moore; Executive Committee, Drs. J. McCalla, S. Welchens, E. M. Zell; Delegates to State Society, Drs. G. W. Worrall, S. Atlee Bockins, J. A. Martin, E K. Young.

Wm. Nichols Amer, *Secretary.*

AMERICAN DENTAL ASSOCIATION.

The eleventh annual meeting of this association will be held at Greenbrier, White Sulphur Springs, Virginia, commencing on the first Tuesday in August, 1871.

AMERICAN DENTAL CONVENTION.

The seventeenth annual meeting of the American Dental Convention will be held at Saratoga, N. Y., commencing on Wednesday, the 9th day of August, 1871.

All dental practitioners are entitled to the privilege of the Convention, and invited to present any matters of general professional interest.

CLINICAL REPORTS.

UNIVERSITY OF PENNSYLVANIA.

Clinic of Dr. J. E. Garretson, Lecturer on Surgical Diseases of the Mouth.

REPORTED BY DE FOREST WILLARD, M.D.

Melanoid Nævus.

M. G., aged forty-five years. Directly in the centre of the left cheek of the woman before you will be noticed this blue-black growth. It is, as you see, oblong in shape, shining and glistening in aspect, and isolated by an exact line of demarkation from the surrounding parts. In length it measures just one and a half inches; in prominence, half an inch. What is it? We call it a melanoid nævus; that is, the growth is an ordinary nævus, with the addition of a great excess of pigmentary matter; if it were not black it would show itself as one of the species of nævi we have so frequently had the opportunity of examining together, and every one of you would instantly recognize it. It is, then, only the red face painted black.

What is pigment? The word is from pingere, to paint; it is coloring matter—paint—a something used to color, and is found in varying proportions throughout the different races of man, being in excess in the African. The white race has least—the Mongolian and Indian stand intermediate.

The nature of pigment varies, at least as its character is associated with the seat of deposit. We find it in a number of places in the human body as a normal constituent of the tissues; in the internal layer of the choroid coat of the eye, for instance, there is a dense deposit of these black pigment cells, forming a dark background to the sensitive retina.

This membrana pigmenti is composed of several laminæ of hexagonal cells, which appear of a sooty brown color, when seen singly under the microscope, the centre being pellucid, and the pigment granules variously scattered through the cell. It is only in collected numbers that they show the true black color. This layer in animals is of considerable depth, and being of metallic brilliancy, is called the tapetum, and gives that well-known fiery appearance to the eyes of cats, tigers, etc. in the night.

In the iris, also, we find pigment of various colors, while again in its posterior layer are found those purple cells which, from their resemblance in color to a ripe grape, have given it the name of uvea.

The coloring matter of the hair is another instance, but enough is

this mention to show that pigment is a normal, healthy constituent of tissues, and we will now see where it is found pathologically.

Pigmental degeneration is not uncommon, and may be well instanced by the gradually accumulating black pigment spotting and streaking the lungs; by the bronzing of the skin in the complaint known as Addison's disease, and supposed to have some connection with the supra-renal capsules (although a case is reported in the *Medical Press and Circular* for March 8, 1871, in which no lesion was found in these bodies); by the ash-colored spots sometimes found in the mucous membrane of the stomach or intestines of old people; by the black spotting or deposition of these granules in the walls of the arteries, or even in the tubes themselves of some animals, which seem to be allied to fatty degeneration in our own arteries, and finally even by the frequent granules deposited in the arteries of our brains in some instances of disease as recorded in Virchow's Archiv, 1859, vol. xvi. p. 564.

A still more morbid condition is seen in pigmental degeneration of mucous corpuscles in the gray, smoke-colored mucus expectorated at the close of bronchitis; the peculiar color which has usually been ascribed to carbon being really due to an abundance of pigment granules in the cells, which closely resemble those already spoken of as giving the streaked appearance to the lung. Inhaled carbon may be present in such mucus, but the color is not entirely at least dependent upon it, since nitric acid or chlorine will cause it to entirely disappear. In fibrinous lymph corpuscles again we have another evidence of this same degeneration seen in the various shades of black and gray which pervade the lymph of peritonitis, which shades are produced not as formerly supposed, by staining from intestinal gases, but by the incorporation of free pigment granules. [Rokitansky.—De F. W.]

Pigmental adhesions are also spoken of by Paget, in which black spots appear like the pigment marks of the lungs and bronchial glands.

Pigment granules of all kinds greatly resemble each other, and are usually spherical in form. They are sometimes either scattered sparsely or thickly throughout the cells, being also often found in free liquid; but this may have been from an overdistention and rupture of the cells, allowing their escape.

Having thus seen that coloring matter is found both normally and as a product of degeneration, let us see if it progresses still further to give rise to what we call melanosis.

For some reason not clearly understood, an excess of this coloring matter sometimes pathologically centralizes itself, as in the instance before us, and we have tumors of various grades of colors, according to the proportion of the contained pigmental matter.

Now, melanosis is so frequently seen in association with medullary cancer that we have come, unduly perhaps, to connect it with this, and

the name of "black cancer" has been given it; but melanosis is not cancer; it is simply, as we understand it, an anatomical perversion. The tumor before us is not cancerous; at least not cancerous because it is black instead of red; yet it has an unpleasant look, and as usual causes much alarm to the patient and friends.

That moles and melanoid nævi do tend or at least are liable to degenerate into cancers, is undoubtedly true; but in their early stages their structure is simply that of natural skin and epidermis only altered by the deposition of a little coloring matter. This mole upon the lady's face was simply a disfigurement until recently, when it has commenced to grow; and when this stage of activity is reached it is time for us to interpose with surgical aid, just as we would when a wart takes on epithelial degeneration.

As I have said, the cause of the commencement of this active stage is undetermined; yet when the constitutional cancerous element is established, then these spots seem to be the least able to resist the disease, and degeneration begins, accompanied soon by increase in size, and perhaps by twinges of pain. Such a stage of activity may never occur, and many such nævi or moles are carried quietly to the grave of persons advanced in years; yet even at a late day rapid development of the disease may and has occurred. At first such commencing cancer can but be seated in the skin and subcutaneous connective tissue, differing only from medullary cancer in such regions by the presence of a little pigment; and this is the time for removal. Their usual primary occurrence near the seats of natural pigments shows a tendency to conformity with the character of the adjacent natural tissues. The melanosis of the books cannot be regarded otherwise than as pigmental degeneration of medullary cancer, the granules to which the color is due filling the cells about the nucleus, and finally, perhaps, changing it into a granule mass, thus forming a parallel in character of action to that undergone in the process of fatty degeneration. With the knowledge now that these dark growths are not without danger after the commencement of the period of activity, we have no hesitation in advising this woman to have this tumor extirpated at once.

As to the manner of removing these nævi, I have given you my views (*vide* Clinical Report, Dental Cosmos, November, 1870), and need not dwell further upon them at the present time.

In this case hot needles, galvanism, etc. are not applicable—indeed would be useless. The knife is needed, and free excision performed, or else a complete circumscription of the base with the knife and then a strong ligature thrown around the remaining portion, thus strangulating it completely. This is, you know, my favorite method for nævi, yet there are many cases where the knife is preferable.

The one before us is so movable that the ligature can separate every-

thing to the depth of all diseased structure by simply passing long pins a little below the base before tightening the knot, thus pressing the silk far down into the tissues. These pins are removed after the tightening of the ligature. When the slough separates I often apply chloride of zinc to the base, thus insuring a double safety, and giving good, healthy granulations. The dressing may be simply dry lint, or lead-water and laudanum if inflammatory symptoms present themselves. [The skin was then incised and a strong ligature thrown about the tumor. Separation occurred on the fifth day, and the wound healed well.—De F. W.]

Epithelioma of Brow.

Here is a man who has an unhealthy ulcer upon his brow, which was removed some years since, but has recently returned, and gives him considerable uneasiness and occasionally a little pain. The edges are jagged and the bottom foul, while around it the parts are quite solidly indurated. Its return shows either that all the diseased structure was not removed or that there is in this case a tendency to reproduction of the disease, perhaps the commencement of carcinomatous degeneration. The growth is evidently epithelial, but, as you know, an epithelial cancer has at first but a local signification, the constitutional condition being but secondarily produced. The induration about this ulcer is not yet sufficiently diffuse to indicate any serious change in its character, yet it is the best and safest advice to favor its removal before any further damage has been inflicted upon the general system. If this is cancer it is certainly but feeble in degree, and is so often cured that we can almost assure our patients of a non-production of the difficulty. Some have tried to banish it from carcinoma altogether and place it among chronic inflammations as ulcus rodens (Hutchinson) or a form of lupus; but the possibility of its change to proliferating cancer of the skin, as well as the various combinations of this neoplasia with distinctly marked cancer in some points of the infiltrated edges, would seem to place this upon the border, as it were, among the mildest and feeblest of them all.

This man's disease can be thoroughly removed, I believe, and never give him further inconvenience. We shall, therefore, slough it away by the ligature, taking, as is our rule, the precaution of guarding against erysipelas by first cutting through the layer of skin around its base, which is here an inch and a half in circumference.

[Base incised and ligature thrown around it in two portions, being guided by pins, as in the preceding case. Chloride of zinc was also applied around the base, so that every portion might be entirely destroyed. The only dressings used were alum-water cloths. The next morning the obstruction of circulation in the lid had caused considerable œdema, but this was only transient, and gave no pain.—De F. W.]

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Irritability. — Extracts from lectures by Wm. Rutherford, M.D., F.R.S.E., Professor of Physiology in King's College. (*Lancet.*)—"In my last lecture I explained some fundamental and all-important points regarding matter and energy—the two great factors with which chemists, physicists, and physiologists have to deal. We saw that we cannot create or destroy either matter or energy. Our gaseous and solid food consists of matter loaded with energy. The matter and the energy undergo various metamorphoses, and finally leave the body in states very different from those in which they entered it. The oxygen inspired chiefly combines with carbon and hydrogen to form carbonic acid and water; while the complex compounds introduced by the mouth are finally tumbled to pieces of simpler chemical structure, and leave the body as such. The energy enters the body as chemical energy stored up in the food; it passes through various transformations, and leaves the organism chiefly in the form of heat. When it enters the body it is silent and at rest; in other words, it is *potential.* Soon, however, it wakes up, shakes off its lethargy, and in its *actual* form may accomplish feats of, perhaps, nerve and muscular power which can startle the world. * * * * * * * * * *

"Hitherto I have as much as possible abstained from technicalities. It is now, however, time that I should inform you that the various mechanical, electrical, thermal, and chemical manifestations of energy with which I have caused the nerve and muscles to act are termed excitants, irritants, or stimuli; and when these or any other forms of energy, such as sound, light, or mental energy, cause muscle or nerve to act, these tissues are said to be *irritable,* or to possess the property of irritability. Formerly it was fashionable to employ this term *irritability* only when speaking of muscle, and to use the word *excitability* when speaking of nerve. Such distinction is worse than useless,—it is confusing. I advise you to consider these terms as synonymous, and therefore applicable to the same tissues.

"But nerve and muscle are by no means the only tissues which possess irritability. All contractile tissues, all secreting tissues—in short, every living tissue, possesses more or less of it. In the histological section of this class you have seen what happens when the plasm of a cartilage-cell or that of a white blood corpuscle is irritated. Visible motion is produced; the plasm contracts. In the case of the cartilage you have seen the effects of prolonged irritation. You saw that increase in size, accompanied by divisions of the plasm, had taken place; in other words, motion ending in growth and proliferation had resulted. But all motion results from the action of energy, and so the motion which results in the growth and proliferation of a tissue is, like the more visible motion of a muscle, evidence of the evolution of actual energy.

"Every living tissue has irritability; but the results of an irritant

differ in different tissues. A gland-cell secretes, a muscle contracts, when irritated, and so on. It would greatly facilitate our progress, as well as widen our conception of living phenomena, if we could hit upon a definition of irritability which would be applicable to any case. I have given no little thought to this important point; and I believe I have arrived at a conclusion which is by no means unimportant. I consider that *a tissue is irritable if, when irritated, it evolve energy.* The form taken by the energy, or the work which it can perform, may differ in different tissues. It may be nerve-motion, the motion which we call contraction, or that which we call growth, and so on. The essence of the whole matter is that the irritant brings about the conversion of potential into actual energy. It causes the potential energy stored up in chemical compounds to undergo conversion into actual energy; in other words, it brings about chemical, and it may be physical, transformations of matter which permit potential energy to become actual. But if we regard irritability as the power of energizing on the application of an irritant, what shall we say of a lucifer-match? I show you one. All at rest. The energy in its head is dormant; but I apply the heated wire which caused the nerve and muscle to evolve energy, and see how suddenly its energy starts forth. Now, shall we say that the lucifer-match has, like the nerve and muscle, *irritability?* I decline for the present to return a definite reply to this question. I merely suggest it as one which opens up a most interesting and important line of thought. It is true that some forms of energy produced in living beings differ very decidedly from the forms of energy evolved by inorganic matter. It is true that the chemical compounds which yield the energy in the case of animals are such as do not exist in the inorganic world. It is equally true that the structures which evolve the energy in the living being differ very decidedly from the crude things which do not live. It is also true that living things may evolve energy when acted on by agents which are powerless to cause chemical compounds to evolve energy when they are not in connection with living tissue. But the energy evolved by our lucifer has a source similar to that evolved by the living tissue. What kind of line, then, shall we draw between the two cases? This we must leave for future research to determine.

"In considering the effect of irritants, two factors must be kept in view. One is, the nature and power of the irritant; the other is, the degree of irritability of the tissue. If you pinch the skin gently, the sensation produced is slight; if you pinch it severely, pain results. The difference is due to the different degrees of strength of the irritant. On the other hand—the irritant remaining the same—we can intensify or diminish the result by raising or depressing the irritability of the tissue.

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"We have seen that every living tissue is possessed of the property which is termed irritability. I defined irritability as the power of energizing on the application of a stimulus, and pointed out that all irritants or stimuli are forms of actual energy, and that their action may be referred to their power of producing a commotion in the particles of the tissues, which causes them to evolve certain forms of energy. I further showed you that the result which follows the application of an irritant to any tissue depends on two factors—to wit, the power of the irritant and the irritability of the tissue. We shall now study the means by

which the irritability of the tissues may be raised or depressed; in other words, we shall consider how the proneness of the tissues to energize may be increased or diminished. Take care to draw a distinction between the *irritation* of a tissue and the variation of its *irritability*. It is necessary to carefully remember this, for many agents which alter irritability also *irritate* when they are suddenly brought to bear upon the tissue. For example, if heat be applied very gradually to a nerve, its *irritability* is increased; but if a considerable amount of heat be suddenly applied, a commotion resulting in the evolution of energy takes place amid the particles of the nerve; the nerve is *irritated*.

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"Gentle stimulation of a nerve or a muscle increases its irritability; over-stimulation diminishes it. The nutrition of an irritable tissue has, as one would anticipate, much to do with its irritability. You may observe daily how irritable weak persons almost invariably are. You can scarcely avoid treading on their toes in some way or other. They cannot bear the pain borne by stronger persons. Irritants too slight to be heeded by the strong worry and annoy them. This effect of defective nutrition upon nerve-tissue is most curious, and demands more careful study than it has hitherto received. Of course if the nutrition of the tissue be completely arrested, irritability disappears altogether. The curious point is, that a nerve whose nutrition is to some extent defective should discharge its energy more readily than one whose nutrition is perfect.

"Various mechanical influences affect irritability. If you crush or tear an irritable tissue, you injure the structure and lower the irritability. I pinch the end of this nerve with a pair of forceps. The muscle contracts because the nerve is irritated. I pinch the same piece of nerve again; but this time the muscle is motionless. My first pinch destroyed the tissue and annihilated its irritability.

"Various chemical agents affect irritability. For example, strychnia affects the irritability of the excito-motor nerve cells or fibres contained in the spinal cord. It at first increases, and then, if the action be long continued, it diminishes, the irritability. Let us convince ourselves of this. On pinching the foot of this frog, you see that it jumps away in a vigorous but at the same time sedate manner. It does not seem to be particularly annoyed by such an irritation. We shall see how it answers to our stimulus after it is poisoned with strychnia. . . . [A few drops of the solution of strychnia were introduced under the skin. The reasons for this procedure were explained. After waiting for a little while the skin of the animal was merely touched, with the effect of throwing the animal into tetanic spasm.] You see that a mere touch on the skin produces a result far greater than a pinch of the foot did before the animal was poisoned. At present we shall not proceed to ascertain experimentally what are the parts of the nervous system upon which the poison acts. I simply say that the result you witness is due to an increase in the irritability of excito-motor nerve cells or fibres in the spinal cord. The reason why these parts are fixed upon as being the seats of action of the poison will be afterwards shown to you. I now give the animal a large dose of the poison. We shall soon find that a touch or a pinch will fail to call forth any reflex movements. The cause of this is loss of irritability of the excito-motor cells or fibres in the cord. The irritability of the peripheral terminations of voluntary

motor nerves is lowered by another poison—curara. . . . [Some curara was injected under the skin of another frog. When the motor paralysis had supervened, the skin was removed from the legs, and it was demonstrated that the paralysis was due to loss of irritability by the motor nerves.] Many other substances affect nerve irritability; others affect muscle irritability. But we shall not for the present enter into a further consideration of this matter.

"You have seen that the irritability of certain tissues may be affected by various agents. You have seen that some agents increase, while others diminish, the proneness of the tissues to energize. The facts which you have witnessed will doubtless lead you to ask for their explanation. Unhappily, you must accept hypotheses until you or others furnish explanations which are more satisfactory. Bear in mind that the evolution of energy in living tissue implies chemical changes. We may safely say that a certain chemical composition of a tissue is essential for the evolution of energy within it. Now you are doubtless aware that the application of heat to various chemicals increases their proneness to change. How slowly oxygen acts upon iron at ordinary temperatures; how rapid the action becomes when heat is applied; and so on. Heat no doubt plays the same *rôle* with regard to the chemical changes that take place in the tissues. Heat increases irritability, probably because it increases the proneness to the chemical changes which are usually connected with the energizing of the tissue. If too much heat be applied, however, chemical changes take place which result in the death of the tissue. With regard to the influence of chemical agents, it is conceivable that they may combine with, or decompose the molecules of, the tissue, and so alter the composition that the evolution of energy takes place more slowly or more rapidly. It is also conceivable, however, that by their mere presence amid the particles of a tissue, they may, without altering their composition, influence their powers of energizing. The influence of an electric current upon irritability has been referred by Ranke and others to electrolysis of the tissue. Ranke* has endeavored to show that the acids formed by the current at the + pole lower, while the alkalies formed at the — pole increase, excitability. Du Bois Reymond referred the influence to polarization of the particles of the tissue: the polarization at the — pole increasing irritability; that at the + pole diminishing it. I do not think that we are at present in a position to give a decided preference to the one view or to the other.

"I enter into these theoretical considerations just for the sake of completeness, and also in order to tempt you to make them subjects for study. In conclusion, I would draw your attention to this interesting fact: if you increase the irritability of a tissue, you cause it to *live faster* than it will do if its irritability be kept low. I have here two frogs' legs, with their nerves. One has been kept in a moist chamber, cooled by iced water dropping upon it; the other has been kept in a similar moist chamber, heated to 100° Fahr. Both have been in these chambers for an hour. I stimulate the cold nerve; the muscle contracts. I stimulate the heated nerve; the muscle is motionless. I stimulate the heated muscle; it contracts feebly. The heat has killed the nerve. But certainly this temperature was not sufficient to kill the tissue at once;

* Die Lebensbedingungen der Nerven. Leipsic, 1868.

on the contrary, it is a temperature which for a time *increases* the irritability of a frog's nerve. The heat seems to accelerate the life of the tissue. Think over this interesting point, and you will not fail to perceive that it is one of much importance."

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Nerve-Cells, General Functions of. Wm. Rutherford, M.D. (*Lancet.*)—"It is convenient to regard a nerve-centre as consisting of one or more nerve-cells, although in two great nerve-centres—to wit, the gray matter of the cerebral and cerebellar convolutions—there is a large quantity of a granular plasm existing in a diffused state, and not in the form of cells. Speaking broadly, nerve-cells generate and conduct nerve energy. The liberation of energy is in many instances called forth by the action of nerve-fibres connected with the cell. In other cases the cells *seem* to energize *spontaneously.* It is certainly doubtful to what extent they do this. Possibly many of their actions, which we consider to be spontaneous, are really called forth by influences acting from without. While, however, there is reason for supposing that some nerve-cells may act spontaneously, every fact seems to show that a nerve-fibre does not do this. It does not pass into a state of action of its own accord. It must be prompted by the energy of the nerve-cell, or by some other form of energy. Some nerve-cells appear to exert a trophic or nutrient influence upon the nerve-fibres connected with them. The nerve-cells in the ganglia upon the posterior roots of the spinal nerves seem to exert this influence over the sensory fibres of the spinal nerves, as shown by Waller. When the fibres are cut off from the ganglion, either above or below it, they undergo degeneration."

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Nerves, Functions of.—"One or both extremities of a nerve-fibre seem always to end in a nerve-cell. Nerve energy seems always to pass through nerves in definite directions. Nerves may therefore be grouped into three classes, named with reference to the direction in which nerve energy passes through them. I. Those which conduct from a nerve-centre, named centrifugal, efferent, or excitant. II. Those which conduct to a nerve-centre, named centripetal, afferent, or incident. III. Those which conduct between two centres, named intercentral (Hermann). This classification is by no means perfect, but it is in many respects convenient. The centrifugal class of nerves may be further subdivided into—1. Motor; 2. Secretory; 3. Trophic nerves. The centripetal class into—1. Sensory; 2. Those which cause reflex actions; 3. Inhibitory nerves. The intercentral nerves are chiefly found in the brain, spinal cord, and ganglia. Their functions are probably the same as those of the centrifugal and centripetal nerves; that is to say, they may minister to sensation, motion, inhibition, etc.; and in addition to the actions which I have mentioned, some of these intercentral fibres are doubtless concerned in various mental processes."—(*Ibid.*)

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Secretory Nerves.—"The glands which serve most conveniently for this demonstration are the salivary glands. The dog which you see on the table is thoroughly narcotized by opium. In order to do this, I simply injected some tincture of opium into its external jugular vein. I have inserted a long glass tube into the duct of one submaxillary

gland. I have exposed the chorda tympani nerve going to the gland, and have also separated the cervical sympathetic nerve from the vagus below the superior cervical ganglion. Let me tell you that in the dog and cat the sympathetic and vagus form a single trunk in the neck, instead of two, as in man and in the rabbit. In the cat it is easy to separate the two nerves; but in the dog it is much more difficult, excepting near the superior cervical ganglion, where the isolation may be effected easily enough with a little care. I have done all these things beforehand, because they require nearly half an hour, and the dissection could not have been seen by more than two or three of you. If you come and examine the parts exposed, you will have no difficulty in understanding the simple dissection which I have made. When you make it, just remember that you have to deal with things which will not bear any but the most delicate handling. I now divide the chorda close to the gustatory nerve, and the sympathetic about an inch below the superior cervical ganglion. These nerves are both secretory nerves for the submaxillary gland. We shall now stimulate them in order to see the effect of their action upon the secreting structure. I make the induced currents from Du Bois Reymond's machine just strong enough to be felt by the tongue. Just glance at the gland and observe the amount of vascularity. I now stimulate the distal end of the chorda tympani. Observe how rapidly the long glass tube is becoming filled with saliva. . . . You see that it is now dropping with considerable rapidity from the end of the tube. Those of you who are near enough may observe how much more vascular the gland is now as compared with what it was before we began the stimulation of the nerve. I now stop the irritation. The effect continues for a little while: that we shall allow to pass off. . . . I now stimulate the upper end of the cervical sympathetic. You notice that the irritation causes the saliva to drop from the tube, but not nearly so fast as when the chorda was irritated. Notice how different is the vascularity of the gland during this irritation as compared with the former. It is far less now than it was during the chorda stimulation. It is even less than it was previous to the sympathetic irritation. We shall pursue this subject further when we study secretion more particularly; meanwhile I would point out that nerves may cause a gland to secrete, or at any rate may increase its secretion, probably by an action on its vessels, and also by an action on its secreting cells. If the nerves cause vascular dilatation, it is easily conceivable that the increased amount of blood with which the gland is supplied may have an important influence on the amount of its secretion. In the kidney, perhaps, more than in any other gland—as we shall afterwards see—do changes in vessels and in the amount of blood regulate the amount of secretion. In the salivary glands, however, the increased secretion which follows irritation of the sympathetic takes place in spite of *contraction* of the blood-vessels brought about by the nerve. On this account the increased secretion is attributed to an action of the nerve upon the secreting cells; the more so because an active proliferation of the gland-cells takes place during the irritation of the nerve, and the saliva in consequence becomes loaded with salivary corpuscles. The blood-vessels of the gland are dilated by irritating the chorda; the saliva secreted during the irritation is thin and watery, unlike the sympathetic saliva, which is tough and viscous. Does the chorda saliva result

simply from dilatation of vessels and not from a direct influence of the nerve upon the secreting plasm? No! The mere dilatation of vessels and increased supply of blood will not explain it. During irritation of the chorda the pressure of the saliva within the duct of the gland can rise above that of the blood within the arteries. Hence the secretion cannot be regarded as a mere filtration through the walls of the capillaries. Here, as in the case of the sympathetic, the nerve irritation occasions an active proliferation of the gland-cells. How the nerve influence gets to the secreting plasm is a question to which we dare not as yet give a definite answer. Pflüger says he has traced nerves into gland-cells in both the submaxillary gland and liver. Other observers have not, however, been able as yet to confirm this."—(*Ibid.*)

"*Bichloride of Methylene (Chloromethyl) in General Surgery.* By T. Spencer Wells.—In your number of to-day there are some remarks on 'Modern Anæsthetics,' from which a reader might infer that while bichloride of methylene may be usefully employed in operations on the eyes, it is not an agent 'of very extensive utility,' nor likely to supersede the use of chloroform in general surgery.

"I believe the writer has thus expressed what is commonly believed to be true, as I have seen and heard several statements to the effect that, like nitrous oxide gas, the bichloride of methylene—or chloromethyl, as it may be more conveniently called—is only to be used for short operations, and that it cannot be safely administered for more than one or two minutes. But, as my experience would show that this commonly expressed opinion is the very reverse of the truth, it seems to be my duty to make known what I have seen of the use of chloromethyl in general surgery.

"The first surgical operation in which chloromethyl was ever used was a case of ovariotomy, which I performed in October, 1867. It was administered by Dr. Richardson himself, and in his report to the British Association, in 1868, he says: 'After subjecting myself to the action of the vapor to the production of perfect insensibility, I ventured to administer it for surgical purposes on the 15th of October last. The sleep produced was of the simplest and gentlest character, and the operation, performed by Mr. Spencer Wells, which lasted thirty-five minutes, was quite painless.'

"This was my 229th case of ovariotomy. I have now done 417, and, with the exception of about 10, where, for some reason or other, chloroform was used, chloromethyl was the anæsthetic employed in every case, about 180 in number. In some 25 other cases of gastrotomy, and in more than 50 operations of more or less severity,—such as herniotomy, amputation of the breast, removal of mammary or other tumors or of hemorrhoids, and plastic operations for the cure of vaginal fistula or ruptured perineum,—chloromethyl has been administered for me either by Dr. Richardson himself or by my colleagues, Dr. Junker and Dr. Day. In very few of these operations was the condition of insensibility to pain maintained for less than five minutes. In a few it was kept up from forty-five minutes to an hour or more, and I should think the average would be about fifteen minutes. Yet I have never been at all uneasy in any one of these cases, more than 250 in number, either during the administration of the anæsthetic or from any subsequent ill effects fairly referable to it; whereas with chloroform I never felt quite

at ease; and, although I never lost a patient during operation, I have three times had to resort to artificial respiration, and I have very often seen patients suffer so much from chloroform, vomiting for many hours after operation, that the result has been imperiled, and in some cases a fatal result has been in a great measure due to the vomiting. It is quite true that chloromethyl has also 'the disadvantage of causing nausea and occasional sickness;' but in my experience this is almost the rule with chloroform, whereas with chloromethyl it is certainly exceptional.

"When I add that between April, 1870, and March, 1871, I had thirty-two successive cases of ovariotomy in private practice without one death, every patient having recovered, it must be admitted (as anæsthesia was complete in every case, not one patient having been conscious at any stage of the operation) that the anæsthetic employed is a good one. In some cases less than two drachms was used, and very rarely more than six drachms. Dr. Junker's apparatus was generally employed, and Mr. Krohne tells me that many practitioners on the Continent, in America, and in different parts of our own country, who have ordered it from him after seeing it in my practice, have used it without difficulty, and have been well pleased with the results."—(*Lancet.*)

"*Inhaler for Bichloride of Methylene.* By Mr. Rendle, Surgical Registrar of Guy's Hospital.—It consists simply of a conical leather cup, shaped so as to fit the mouth and nose, and abundantly perforated with holes. In this fits loosely a flannel bag, upon which the agent is poured, and from which it rapidly evaporates as the air is drawn through it by respiration. When not in use the leather cup serves as the cover to a small tray containing a bottle of the methylene, a graduated bottle, and a minim glass; and the whole, being fastened with a strap, forms a very convenient and portable arrangement for producing anæsthesia of a temporary character."—(*Ibid.*)

"*Death under Methylene.*—At Charing Cross Hospital another death under bichloride of methylene has occurred in a case of amputation of the finger. Mr. Canton gave evidence at the inquest which resulted in a verdict that the 'deceased died from the effects of methylene properly administered.' Mr. Canton stated that at the *post-mortem* examination 'there was not the slightest trace of any action of the methylene on either the heart or brain, the organs mainly affected by chloroform when administered. The only way he could account for the man's death was, that being in a state of great nervous excitement at having to undergo the operation, the methylene had acted upon the nervous system, producing instant death. He had known death to have resulted under an operation from the nervous excitement of the patient without chloroform having been inhaled. There was no doubt that the death of the deceased had been produced by the methylene he had inhaled. The cases of death while under the influence of methylene were extremely rare. In all probability the deceased would have survived the operation had it been performed without his inhaling the methylene, which was administered at his own request. He never allowed methylene to be administered to a patient about to undergo an operation, unless with the patient's full consent after due deliberation.'"—(*Med. Press and Circ.*)

Hydrate of Chloral as a Caustic, etc.—A. M. Lewis writes to the *Sci. Amer.:* "Some months ago, when preparing a solution of the chloral, I held the stopper of the bottle containing it between my lips for a few moments. A small quantity of the crystals were sticking to it, and, on replacing the stopper, I found a red spot on my lower lip; this spot became quite sore, and continued so for several days. This fact led me to experiment with the chloral. The result is, I have found it to be one of the best, possibly, *the best*, suppurative agent known. According to the time it is left on the skin, it becomes a perfect rubefacient, irritant, suppurative, or even escharotic.

"I have given it fair tests personally, and strongly recommend its use; but *externally* only. When applied, the burning is precisely like that produced by a cataplasm of strong mustard; but, at the same time, a sedative action is perceived, which somewhat neutralizes the smarting, while it does not prevent an excessive irritation of the skin. It does not blister, but the part the chloral has been applied to becomes exceedingly inflamed, and more or less swollen; and, according to the length of time of application, shows a merely reddened skin, or a suppuration of several weeks' duration.*

"I give you my mode of application: take a piece of fresh adhesive plaster, of the size wanted, and crush fine, on its surface, with an ivory spatula, enough of the crystals of the chloral to powder the piece of adhesive plaster quite evenly; use the edge of the spatula to take off the chloral where it is more than a mere dust in thickness, but distribute evenly, leaving one-third of an inch margin for adhesion; heat the back of the plaster for an instant only, and apply. Leave it on about half an hour as a rubefacient, six hours as an irritant. To produce suppuration, put the chloral on the plaster in larger quantities, and leave on from twenty-four to thirty-six hours; on its withdrawal, apply a stimulating salve, and afterward heal with cerate. For an escharotic effect, apply the chloral, thickly spread, and, after twelve hours, repeat the application, if necessary.

"It is surprisingly active as a suppurative, and, for this reason, it will not be prudent to apply it to any part of the surface of the abdominal cuticle, as, in one case under my inspection, having been left on too long, it occasioned a deep ulceration that was difficult to heal.

"In this new mode of use, the chloral is truly invaluable; it is easily applied, cleanly, and perfectly reliable. It is a first-class derivative in facial neuralgia, earache, headache, and any affection of the eyes, a small plaster, of a half inch diameter, that can be hidden by the hair, being sufficiently active, if prepared with enough chloral, to irritate in a very short time."

Epithelioma removed by Bromine.—Dr. Wynn Williams showed to the Obstetrical Society of London "a patient nearly the whole of whose lower lip had been removed for epithelioma eighteen months previously. The disease shortly appearing in the cicatrix, the growth was successfully treated by two injections of bromine, twenty drops to a drachm of spirit. There was no appearance of disease at present."—(*Lancet.*)

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* As suppuration is destructive and objectionable, every effort should be made to prevent rather than promote it.—Z.

"*Erectile Tumor, involving the Lower Lip, removed by Injections of Persulphate of Iron.* By Francis H. Milligan, M D., Wabasha, Minnesota.—A little daughter of my friend, Dr. M. B. Axtell, of Pepin, Wisconsin, aged two years, had a congenital erectile tumor protruding from the free border of the lower lip, which gave my friend and his wife much uneasiness.

"I was consulted soon after the birth of the child, and recommended that no operation be performed until after dentition.

"Numerous plans were spoken of. I suggested, therefore, that the tumor be injected with persulphate of iron, and then, if we failed to remove the unsightly mass, incision could be resorted to. An ordinary hypodermic syringe was charged with the solution of persulphate of iron, 40 Ms., and inserted about a line from the diseased mass, in the sound skin, and discharged in the body of the tumor. No precaution was taken to obliterate the vessels leading from the tumor. The entire mass, with a slight portion of the centre, at once changed color and became as hard as metal.

"Four days after the operation I again saw my little patient, and to make the operation sure, injected it twice more, which I now believe was unnecessary.

"The child was in great misery after the operation, the face and cheeks swelling, and for two hours it was impossible to quiet the child. Eight days after the last operation the entire mass sloughed away, and now there is not a particle of deformity. The doctor has the tumor dried and shrunken, with quite a metallic appearance.

"When these erectile tumors are so located that the circulation to and from them can be controlled, I shall hereafter remove them by injections; and I shall never again operate without taking this precaution."—(*Northwestern Med. and Surg. Jour.*)

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"*Mucous Tubercles of the Mouth, and Condylomata.* Clinic of Prof. S. D. Gross, Jefferson Med. College. Reported by Ralph M. Townsend, M.D.—You will see on this young man, around the verge of the anus, condylomatous excrescences. He is eighteen years of age, and from his statements would appear to be a good boy, as he says he never runs round and has never had any disease contracted from women. When I look at this patient's mouth, however, I discover mucous tubercles upon his lips. The coincidence of these tubercles with the condylomatous excrescences is sufficient evidence of constitutional syphilis; but whether congenital or acquired, with the light before me I cannot at present determine. If this boy were smoking a pipe, and, without wiping the stem, should hand it to his friend, the latter might be inoculated; especially so if he had a crack or fissure upon his lips. Bear in mind, then, that the secretion from these mucous tubercles will inoculate and produce a chancre."

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Syphilitic Inoculation by a Kiss.—"E. Burke Haywood, M.D., Raleigh, N. C. (*Trans. N. C. Medical Society*), recently saw a young lady suffering from buccal chancre caused by a kiss given her on the lips by her engaged lover, who was at that time suffering from secondary syphilis. The contagion was communicated by the secretion from a mucous patch on the upper lip of her lover. He was ignorant of the danger of contaminating his lady-love by this manifestation of his affec-

tion. He had been under treatment several weeks before for primary syphilis, and thought that he was cured. The young lady, when first seen, had a well-marked chancre on her upper lip, which had existed for more than ten days, and was thought by her to have been caused by a chapped lip. There was much induration of the upper lip, and the parotid and submaxillary glands were much enlarged and very painful. The induration continued for several weeks, and was followed by well-marked secondary symptoms."—(*Medical Record.*)

Poisonous India-rubber.—"Mr. Richard Evans stated that six years ago one of his children died, and upon application to the medical man who attended the child for a certificate of death, it was refused, the child exhibiting strong symptoms of having been poisoned, symptoms which, he considered, were produced from the use of an ordinary feeding-bottle, the white tubing not being india-rubber, but a composition (consisting of india-rubber dissolved in ten per cent. of bisulphide of carbon, and thickened up with white-lead, resin, and sometimes oxysulphuret of antimony, to give it a pink color), from which, when coming in contact with the milk, sulphuretted hydrogen was evolved and lactate of lead formed in the stomach. He exhibited a feeding-bottle, the advantage of which was that the tubing and teat being formed of native rubber, vulcanized by means of magnesia, none of the evils mentioned in the other case could possibly occur. He stated that Dr. Nevins, the lecturer at the Royal Infirmary School of Medicine, had recommended the students when they met with cases of vomiting, griping, and diarrhœa in infants, to ascertain how they were fed, and if the white tubing was used to treat the patient for lead-poisoning.

"Mr. A. Norman Tate, analytical chemist, stated that at the request of a medical gentleman he had analyzed some samples of tubing, and found lead in each.

"Mr. Davies had tested several samples with the same result, and testified the value of Mr. Evans' suggestion, from practical experience."—(*Chemist and Druggist.*)

"*Impaction of Molar Tooth in Left Bronchus, etc.*—Dr. Weir presented to the New York Pathological Society a specimen, showing the impaction of a greater portion of the molar tooth in the first division of the left bronchus. The patient from whom it was removed was an inmate of St. Luke's Hospital. Some months ago, he sustained a compound fracture of the lower jaw, the result of a blow from an axe. The ordinary treatment was employed, but the union was very imperfect, owing to the impaction of some dead bone. It being thought necessary to remove the dead bone referred to, the patient, a stout, pale Irishman, aged forty, was etherized Jan. 3. He took the ether very badly. Enlarging the fistula which led to the dead bone, it was discovered that a sequestrum was attached to a molar tooth. The tooth was seized, and, in the attempt to withdraw it, the patient was seized with a vomiting-fit, and in the struggle the tooth being dislodged, disappeared. The material vomited was in the confusion thrown away by the attendant. Not being satisfied as to the whereabouts of the tooth, the house-surgeon was directed to watch the patient, and to have the fæces thoroughly examined. This was done, and with no result. There was no marked coughing, or evidence of irritation about the chest when the tooth dis-

appeared. For some days after, the patient did not do very well, but this circumstance was attributed to the amount of blood lost. In the course of two or three days he had a slight attack of bronchitis, but on examination nothing was found. Under the usual treatment the symtoms abated. Nothing of special note occurred in the case until the tenth day after the operation, when the house-surgeon reported that with a persistent bronchial irritation, the patient had very feeble respiration of the left side. At times the inspiration over the left lung would appear to be suddenly checked, although expiration seemed at all times easy. A consultation having been called on another case, the gentlemen present saw this one also. On examination no satisfactory results were obtained, save that the existence of pneumonia was recognized, the only thing peculiar about the case being a heaving effort at respiration to which attention was called by Dr. Sands. It was deemed advisable to perform tracheotomy as an explorative operation, and then attempt to dislodge the tooth if it could be reached farther down, thus repeating an operation of a similar nature so successfully performed by Dr. Buck. The patient, however, refused to have the attempt made, and died unrelieved.

"At the autopsy the left lung was found the seat of red hepatization, and in the first division of the bronchial tube was found a decayed molar, the upper portion of which was hooked into the mucous membrane in such a manner as to preclude the possibility of its extraction from above in case the operation had been performed. About an inch below the point where the tooth was found, and adjoining the pleura, was an abscess filled with broken-down tissue, the whole being about the size of an English walnut; another, also of the same size, was found deeper in the substance of the lung."—(*Medical Record.*)

Preserving Anatomical Specimens. By Dr. Ehrhardt. (*Med. Gaz.*) —"The simplest means of preserving anatomical and pathological preparations is the use of the following solution: saturated solution of alum, 100 grammes; saltpetre, 2 grammes.

"The article to be preserved is immersed in the solution, when it becomes decolorized; but in a few days the color returns, when it is taken out of the solution, and kept in a saturated solution of alum and water only."

"*Bisulphide of Carbon.*—The manifold uses to which the bisulphide of carbon has been applied of late years have made it one of the most important of our chemical products. It is the best agent for extracting oil from press-cake or from any other source. Near Berlin are extensive oil factories, where the extraction is accomplished by this chemical means. The most extensive application of the bisulphide has been in the vulcanization of india-rubber; it is used for this purpose in association with a small quantity of chloride of sulphur. Linen rags which have been used to wipe machinery, are cleansed, and the oil saved, by digesting in the bisulphide of carbon. Its effects upon the lower forms of life are analogous to those of carbolic acid. It destroys the larvæ of insects, and has hence been extensively used to destroy vermin. For the extermination of the weevil in wheat, a small quantity of the liquid, put in a saucer and placed on a beam in the granary, is found to be very efficacious. It is a valuable solvent for sulphur,

iodine, and many substances not soluble in water. Dr. Gibbs recommends a solution of phosphorus in bisulphide of carbon as the best liquid for filling prisms in experiments upon light, as it possesses high refracting power, much superior to the best flint glass.

"The bad odor of bisulphide of carbon can be removed by distilling it off scraps of metal, and repeated rectification; it is then very much like an ether, and can be used to extract the principle from pepper, ginger, coffee, and spices, in the manufacture of condensed food. It could be employed in the preservation of meat if it were not for its disagreeable odor."—(*Sci. Amer.*)

"*Liquid Fuel.*—A Chicago paper sketches, as follows, an apparatus by which it is claimed petroleum may be used as fuel without the danger experienced when the liquid is brought in direct contact with the fire: 'The apparatus consists of a cylinder, like a small locomotive boiler set on end, with a small cylinder within it, the intervening space being filled with petroleum. The smaller cylinder is filled with six hundred small copper tubes, and through these the superheated steam passes, producing vapor from the oil that fills the interstices between the tubes. This vaporized oil rises through a layer of prepared sponge, and just at the point of exit is mixed with superheated steam in any required proportion, thus producing hydrocarbon gas. This gas passes through iron tubes to the point where the fuel is needed, and is there burned, very much like common gas. In one case the kiln was filled with stone, and in a very short time after the fire was lighted the heat was most intense. All this time the fire was under perfect control, and by a simple turn of a screw the combustion was made more or less intense. The experiment was varied by admitting a greater or less proportion of steam into the pipes, so that in some cases the fire was fed with fifty per cent. or more of water, and the remainder of vaporized oil.'"—(*Amer. Artisan.*)

"*Domestic Use of Aqua Ammonia.*—A 'Housekeeper,' in the *Michigan Farmer*, says: For washing paint, put a tablespoonful in a quart of moderately hot water, dip in a flannel cloth, and with this merely wipe over the wood-work; no scrubbing will be necessary. For taking grease spots from any fabric, use the ammonia nearly pure, and then lay white blotting-paper over the spot and iron it lightly. In washing laces, put twelve drops in warm suds. To clean silver, mix two teaspoonfuls of ammonia in a quart of hot soapsuds, put in your silver and wash it, using an old nail-brush or tooth-brush for the purpose. For cleaning hair-brushes, etc., simply shake the brushes up and down in a mixture of one teaspoonful of ammonia to one pint of hot water; when they are cleaned, rinse them in cold water and stand them in the wind or in a hot place to dry. For washing finger-marks from looking-glasses or windows, put a few drops of ammonia on a moist rag and make quick work of it. If you wish your house-plants to flourish, put a few drops of the spirits in every pint of water used in watering. A teaspoonful in a basin of cold water will add much to the refreshing effects of a bath. Nothing is better than an ammonia-water for cleansing the hair. In every case, rinse off the ammonia with pure water."—(*Sci. Amer.*)

Metaline or Dry Bearings.—"The *Engineer* says that a new material for bearings and shaft-steps, which, judging always from what we have seen, appears likely to prove the most important improvement that has been introduced into machinery for many years. Metaline is a new substance, made of old and well-known ones, and fashioned into bearings and footsteps, which require no lubricant. At least so say the inventors; and they prove what they say by running an engine at 100 revolutions without oil, cotton-spindles at 3000, and one experimental spindle at 10,000 revolutions. In appearance metaline somewhat resembles black-lead; but it is not black-lead, nor does it necessarily contain black-lead, although plumbago may sometimes be employed in its formation. For small bearings, cotton-spindle steps, etc., it is formed into little tubes and cups. For large bearings it is made in the form of little buttons, ½ inch diameter and ⅜ inch thick, forced into suitable cavities drilled into the ordinary brass bearings. The theory involved is this: bearings wear because the surfaces brought into contact are never truly smooth; they always resemble, more or less, two brushes drawn over each other, the prominences and cavities interlocking. Oil or grease acts as lubricant, because it keeps the surfaces apart and prevents interlocking. Metaline acts by filling up all the cavities, however small, in the shaft or bearing, producing a perfectly true surface, with which there can be no interlocking, and consequently, although friction remains, there can be no cutting, while heat is reduced to a minimum and deprived of its evils."—(*Jour. Applied Chemistry.*)

"*Water-proof and Fire-proof Cements.*—Water-proof cements for mending broken crockery are usually not fire-proof, and fire-proof cements are seldom water-proof. The following, however, is claimed to be both: Mix two ounces of milk with two ounces of vinegar. It will curdle. Separate the curd from the whey, and mix the latter thoroughly with the white of an egg. Finally add quicklime through a sieve until it is as thick as a paste. The cement is then ready for use." —(*Ibid.*)

Cement for Gas-holders.—In reply to an inquiry, J. T. W., of Massachusetts, writes to the *Sci. Amer.*: "If F. C. does not find a cement for his gas-holder, insoluble in both oil and water, let him caulk the leaky spots in the seams with tin foil; heavy tobacco foil is the best. I had a 1000 feet holder, for gas made from the lighter products of petroleum, which leaked very badly, and none of the usual cements, paints, varnishes, or tar would stop the leaks; an afternoon in a dentist's chair, having teeth filled, suggested a similar process for my disabled gas-holder, and it was a success."

"*Copper, Brass, and Iron tinned at the Ordinary Temperature, and without the Intervention of any Apparatus.* F. Stolba.—The author states that all objects to be tinned should first be perfectly cleaned from oxide, as well as greasy matter; the cleaning may be effected either by mechanical or chemical means. The ingredients employed are finely pulverized zinc and a carefully-made solution of protochloride of tin, containing from five to ten per cent. of that salt, to which solution about a small pinch of cream of tartar should be added. This solution is rubbed over the object to be tinned, and immediately

after some of the finely-pulverized zinc is also rubbed on; a sponge or a piece of cotton waste free from grease is the best for the purpose of rubbing on the solution of tin and the zinc powder. When the tinning is complete, the object is washed with water, and next polished with previously-washed and pulverized chalk."—(*Polytechnisches Journal* and *Chem. News.*)

"*To cut or bore Glass.*—Any hard steel tool will cut glass with great facility when kept freely wet with camphor dissolved in turpentine. A drill-bow may be used, or even the hand alone. A hole bored may be readily enlarged by a round file. The ragged edges of glass vessels may also be thus easily smoothed by a flat file. Flat window-glass can readily be sawed with a watch-spring saw by aid of the solution. In short, the most brittle glass can be wrought almost as easily as brass by the use of cutting tools kept constantly moist with camphorized oil of turpentine."—(*Boston Jour. of Chem.*)

"*Testing for Gold with Iodine and Bromine.*—W. Skey, in the *Chemical News*, gives a method for detecting small quantities of gold by the use of iodine and bromine. Two grammes of roasted quartz sand, which contained 2 ounces of gold to the ton, was shaken up with an equal volume of a tincture of iodine, and after the sand had settled to the bottom, and the liquid above was clear, a piece of Swedish filter paper was immersed in it, and afterwards burned. The ash was not white, but purple, and the coloring matter was quickly extracted by bromine. One gramme of the same gold-bearing quartz was taken and thoroughly mixed with other rock, so that the gold did not exceed 2 dwts. per ton, and left for two hours with constant stirring, in contact with the iodine tincture. A strip of filter paper was then immersed five times in the liquid, and tried each time, then burned and treated with bromine as before, when traces of gold were made evident. Hematite ore was mixed with gold quartz in such proportions that the gold did not exceed 0·5 dwt. to the ton, and yet it was easily detected in this way. By the amalgamation method it is scarcely possible to detect gold, even when 100 grammes are put into test, where the amount does not exceed 2 dwts. to the ton. Mr. Skey's process, being easy of execution, offers many advantages over the old way of testing for gold." —(*Sci. Amer.*)

"*Gutta-percha Cements.*—For uniting sheet gutta-percha to silk or other fabrics: gutta-percha, 40 lbs.; caoutchouc, 3 lbs.; shellac, 3 lbs.; Canada balsam, or Venice turpentine, 14 lbs; liquid styrax, 35 lbs.; gum mastic, 4 lbs.; oxide of lead, 1 lb.

"For uniting sheet gutta-percha to leather, as soles of shoes, etc.: gutta-percha, 50 lbs.; Venice turpentine, 40 lbs.; shellac, 4 lbs.; caoutchouc, 1 lb.; liquid styrax, 5 lbs.

"In making the cements the Venice turpentine should be first heated; then the gutta-percha and the shellac should be added; the order in which the other materials are added is not important. Care should be taken to thoroughly incorporate them, and the heat should be cautiously regulated, so as not to burn the mixture."—(*Ibid.*)

"*Silvering Ivory.*—Immerse a small slip of ivory in a weak solution of nitrate of silver, and let it remain till the solution has given it a deep

yellow color; then take it out and immerse it in a tumbler of clear water, and expose it in the water to the rays of the sun. In about three hours the ivory acquires a black color; but the black surface on being rubbed soon becomes changed to a brilliant silver."—(*Ibid.*)

"*Paste that will Keep.*—Take one tablespoonful of flour, add gradually one pint of cold water; boil slowly, and stir well to prevent burning, till it thickens. Keep it boiling till it becomes thin; then add one teaspoonful of nitro-muriatic acid, and boil till it again thickens, when it is ready for use. This paste is harmless, cheap, and will neither turn sour nor mould."—(H., *Ibid.*)

"*Silver Solder.*—Let your querist get one dwt. of pure silver and one-half dwt of common pins, and melt them together; he will have an easy flowing solder, but must use a gas-jet to solder with."—(*Ibid.*)

"*Soldering Fluid.*—Dissolve as much zinc in muriatic acid as the acid will take."—(J. K., of Mo., *Ibid.*)

Rust Prevented.—"Dr. Crace Calvert states that iron immersed for a few minutes in a solution of carbonate of potash or soda will not rust for years, though exposed continually in a damp atmosphere. It was believed long ago by soap and alkali merchants that the caustic alkalies (soda and potash) protected iron and steel from rust, but that the components of these salts preserved the same property as they do in a caustic state now. It does not seem to matter whether the solution be made with fresh or sea-water."—(*Ibid.*)

Wire manufactured by a New Process.—"An English inventor has patented a method, by which the heat is retained in the metal during the process of treating wire. This, it is claimed, produces much better and stronger wire than the old process. His specification states that he secures the end of the wire, as it leaves the first pair of rolls upon a revolving drum, which takes up the wire in a hot state, so that it coils itself in layers thereon, whereby the heat which is contained is kept in it. The drum may be inclosed in a suitable casing or jacket, to which, if desired, the heat from a fire or other source may be applied, or the drum may be employed without a casing or jacket. When the full length of wire has passed through the first pair of rolls and on to the drum, the action is reversed, and the wire passed through fresh rolls, when it is taken up by another drum and so on, until the wire is sufficiently reduced. By this means, it is said, the inventor is enabled to produce longer lengths of wire and of a better finish than heretofore."—(*Ibid.*)

Adhesive for Leather Belts.—J. H. Cooper (*Jour. Franklin Institute*) states: "A good adhesive for leather belts is printer's ink. I have the case of a six-inch belt running dry and smooth and slipping, which latter was entirely prevented for a year by one application of the above."

The article on "Cutting Hard Substances," in the last number, should have been credited to the *Journal of the Franklin Institute.*

THE

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ORIGINAL COMMUNICATIONS.

NOTES FOR A MEMOIR ON THE PATHOLOGY OF THE TEETH.

BY A. C. CASTLE, M.D., NEW YORK.

(Concluded from page 300.)

DENTO-NEURALGIA.

APART from the mechanical appliances for the conservation of the teeth, the course of proceeding in learning the disease of the dental system necessarily must be the same as pertains to obtaining a knowledge of the disease of the organs of hearing and of the organs of vision, which must be based upon the sciences of anatomy, physiology, pathology, and therapeutics, with the difference of peculiarity in relation to the teeth, which, as I have demonstrated, present several constitutional varieties in the densities of their structure, both in their bone and enamel organization.

With very few exceptions, the causes of neuralgia are involved in the deepest obscurity. The subject, to be appreciated, must be studied from the beginning of the sciences bearing upon the animal organization. The nervous system is the "box of tools" by which Nature performs her work. Dento-neuralgia connects the fifth, sixth, seventh, eighth, ninth, tenth pairs and the cervico-spinal nerves. These nerves, of course, are correlated with the other nerves of the system.

Of the several divisions into which the general pathology of the human system is divided, not one of them has been passed over with less observation than the pathology of the dental nerves in their connection with the dental organs and the regions of the face, head, neck, shoulders, arms, hands, and fingers, and their neuralgic-sympathetic influences upon the remote organs of the body.

The little knowledge possessed, and the limited information furnished,—for the disease itself, like many other nervous disorders, is based upon speculation,—relative to its cause and nature, and the treatment indicated, has amounted to nothing that offers any specific guide either

for its amelioration or cure. Now and then hospital clinics exhibit a case of neuralgia produced by morbid lesions or the accidents of surgery, which, so far from throwing any light upon the subject, or even affording an insight by which a treatment for its cure might be adopted, the faculty, remaining at fault, are compelled to allow it to take its place with many incurable diseases, which furnish an opprobrium upon the science of medicine.

This circumstance is more to be regretted, because dentists have many opportunities, of cases which daily present themselves to their notice, whereby to investigate the subject. That these advantages should pass unheeded and *unknown*, must be attributed to the mechanical eagerness for a superior reputation in "tooth-filling," and the fabulous fees to be obtained therefor, in preference to any natural philosophy "that does not pay." What good might not be accomplished by the thousands of dental practitioners overflowing every large city, flooding every small town, and crowding every village, nook, and corner of this vast, wide-spread country,—and "the cry is still they come,"—were they not influenced more by money-making motives than by a wish to exalt the character of dento-medico science in its correlation with medical science !

If the dental profession have failed to observe these constant and almost universal pathological neuralgic affections, the reason is obvious, and the truth must be told. It is because the dental profession, with a very few distinguished exceptions, are devoid of anatomical, physiological, and pathological requirements and knowledge to enable them to see the phenomena every day passing before their eyes. If the medical practitioner has failed to recognize or even to make the acquaintance of dento-cause and sympathetic effect relative to the many dento-neuralgic sympathies constantly passing under his notice, it is because he is equally ignorant of dento-neuralgic phenomena, for he has neglected the study of this branch system of anatomy, physiology, and pathology of the dental organization, as being unnecessary, too trivial, and beneath the dignity of his far-reaching learning. If the "tooth-carpenter" *cannot*, certainly the *physician* ought to appreciate the fact that the organs of the body cannot be comprehended as a whole unless each organ and system be well understood as to their individual intention, with their wide-spread influence and intimate connection, as well as their mutual dependence and direct sympathy with each other.

THE WONDERFUL NERVOUS SYSTEM!—the physical representative of the more wonderful VITAL principle or force which endows every atom of the body, including the blood, with active properties or functions; the instruments by which each several atom of each several organization is guided or moulded into the form of the various systems, and united

into one harmonious whole, which by sensibility warns of danger, which gives expression and furnishes motive power, which combats external agents and preserves the being,—the phenomena of which are recognized, but they are beyond the power of the human mind to explain. The exhaustion of the nervous force is repaired by sleep, and the involuntary "vital organs," such as the heart, lungs, muscles of respiration, etc., by *repose*. The irritation of a nerve of sensation causes pain; of a nerve of motion, muscular contraction; of the nerve of the *retina*, the sensation of light; of the auditory nerve, the sensation of sound; of the origin of the pneumogastric nerve, a derangement of the digestive process, with all the concomitant symptoms of dyspepsia, etc. Then the *reflex* action of the nervous fibres of one part reacting upon another part of the body,—such as the irritation of the nose, causing a spasm of the great muscle of respiration, the diaphragm; the effect, sneezing. The inflammation of the parotid glands, "mumps," being replaced in the breast, or testes, and *vice versa*, rétrocedent. Gout and rheumatism of the joints, by *metastasis*, changing their place to the kidneys, stomach, heart, etc. Erysipelatous inflammation "striking" into the brain. Certain sounds irritating the auditory nerves, and through them to the dental fifth pair of nerves, putting "the teeth on edge," and causing a thrill throughout the nervous system, known as "making the blood run cold." A tumor on a nerve produces twitchings and spasms in parts totally remote and unconnected with the origin. Some pathologists apply to these nervous phenomena "radiation of sensation." Persons deprived of an arm or a leg, for the rest of their lives occasionally experience pains, tingling, or pricking sensations, as if the limbs were still present; the cicatrized nerves of the "stumps" being irritated from cause, convey to the brain their pain by a false impression, as if they were entire, and still extended their sentient fibrils to the fingers or toes. A blow on the head affects the stomach, causing vomiting, etc., and a blow on the stomach, by reflex action of the eighth pair of nerves, in pugilist's parlance, "doubles a man up," and a more violent blow, the *coup de grace*, the blow of mercy of ancient torture, causes instant death, paralyzing the stomach, and hence the brain. The sensations of creeping insects, reptiles, etc., affecting delirium tremens patients, are the results of reflex action of the debilitated, perverted gastric sentient nerves of the stomach upon the sensorium, and thence to the nerve fibres, spreading themselves throughout the skin.

Nosologists classify neuralgic nerve-pain affections according to the name of the region in which the pain is experienced. Thus, *neuralgia faciei*, nerveache of the face, the *tic convulsif* and *tic douloureux* of the French; *neuralgia policis*, *neuralgia pedis*, of the foot; *otalgia*, earache; *neuralgia mamma*, of the breasts; the *ischias ner-*

vosum, or pain in the great sciatic nerve; disease of the hip-joint, pain in the knee, odontalgia, toothache, etc.

Of the little that is known of neuralgia, that of dento-neuralgia is altogether lost sight of, although scarcely a day passes without it being presented in some shape to the dentist and physician. Many regions of the body receive the credit of its presence by the several local nomenclature by which they are recognized, but to which, in very numerous instances, they have neither claim nor title; they are sympathetic in character only, and are found to originate in the abnormal condition of the dental organs where no apparent pain is experienced, and where the cause is rarely if ever suspected. To these sympathetic dento-neuralgic affections my "notes" refer, and not to ordinary odontalgic pains in the teeth and gums alone, which diagnostically speak for themselves.

Harris's Dictionary of Dental Science, with all the zealous research of the accomplished author, condenses all that is known of neuralgia in the definition and history of *odontalgia*. Mr. Thomas Bell, London, says "it not unfrequently happens that parts most remote become the seat of pain from exposure of the nerve of a tooth;" but here we are furnished with a diagnostic mark. Dr. Good, in his great work, does not refer to the dental system; he says that "neuralgia is often an idiopathic (self-generated) affection, dependent upon a peculiar irritation from a cause we cannot trace. But," continues the doctor, "it is more frequently a *disease of sympathy*, produced by pregnancy, chronic rheumatism, or acrimony of the stomach." Dr. Wood refers to odontalgic affections where the disease is marked by pain in the teeth themselves, ordinary "toothache, with darting pains to the ear." Dr. Thomas E. Bond, in his *Treatise on Dental Medicine, etc.*, under the caption of "Neuralgia," remarks: "The term neuralgia is not precise, but it is sufficient for practical distinction. It is not certain," he says, "whether the seat of the disease is in the neurilemma or in the nervous pulp" (of the tooth). Dr. Bond pertinently says: "It will be perceived at once that the dentist must be called upon to discriminate between the disease and an ordinary toothache, and unless he be properly informed on these subjects, he may add to the terrible sufferings of his too confiding patients." Upon this hint the doctor rests.

The "singular" cases recorded, at periods remote from each other, of neuralgia disappearing *immediately* after the removal of a diseased tooth, are not so remarkable as the singular neglect of the circumstances presenting themselves, and that such marked and valuable hints should ever have incited an inquiry or philosophical investigation, why or how, or under what pathological circumstances, such supposed serious complaints were so quickly, easily, and completely removed, and why *such* singular cases should have produced no other impression upon the

mind of the medical practitioner than that of being mere curiosities of pathological phenomena.

The following interesting cases, recorded by such distinguished men, certainly ought to have awakened attention, and moved the mind to their investigation. The great Dr. Rush records a case of "madness occasioned by diseased teeth, *which were in no ways painful to the patient*," and recovery after their removal. Dr. Rush also states a case of HIP-JOINT DISEASE and rheumatic affection being *immediately removed* after the extraction of a tooth. The *London Lancet* records a case of "neuralgia of the womb *immediately disappearing* after the extraction of a diseased wisdom tooth." The celebrated Koecker, of Philadelphia, relates a case of epilepsy at once disappearing after the extraction of some diseased teeth. I could fill a volume of dento-neuralgic cases thus sympathetically affecting remote regions of the body, which were immediately cured by the removal of teeth in which disease or the cause of the sympathy was never suspected.

The following selected important cases will indorse the above, sufficiently to prove the correlation of dento-neuralgia with the sympathies of remote organs: The late Dr. John Wheeler, of this city, had *gout-podagra* and rheumatic affection in his right foot and leg for several years, which immediately disappeared after the extraction of the right anterior inferior molar tooth, which had been poisoned by arsenic placed in the tooth to destroy the nerve; five years later, lameness from rheumatic affection in the left *gastrocnemius*, or great muscle of the calf of the leg, immediately disappearing after the removal of the left molar tooth, which pained him from a cold "caught" while fishing.

Mrs. D., neuralgia in throat, neck, and shoulders; at intervals; nine years' standing. Dr. McComb recommended her to consult me. I removed the right central tooth of the lower jaw; tooth apparently sound in every respect; but atrophied at the root, its apex absorbed, and the end of the fang spiculated. Neuralgia did not reappear.

Mr. Dubois, New Rochelle, neuralgia in the stomach; sufferings intense. At the time of the first series of paroxysms I extracted the lower right central incisor; neuralgia cured for several months. On a second series of attacks, I removed the lower left central incisor. Relief was instantaneous, and the neuralgia never reappeared.

Mr. McMinn, of Memphis, had traveled Europe for the best advice; "spent a fortune," and derived no benefit. He called upon me to have some artificial teeth repaired, and related his "years of suffering." I pointed out to him that every remaining tooth in his head was *dead*, and that all the neuralgic and paralytic symptoms in his arms, fingers, and toes, benumbed and pricking sensations, and the rheumatic pains in the *intercostal* muscles (some of the muscles of respiration), causing dyspnœa, or difficulty of breathing, were the *sympathetic nervous* re-

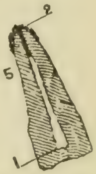
sults of his deranged and irritated dental nerves, caused by the teeth being dead, etc. After mature consideration, never having experienced any pain in his teeth, he consented to have them all removed. The relief was *immediate* and *permanent*. The teeth were remarkable for their enormous size and dry, glassy brittleness.

Miss G., aged twenty-one; affected with *epileptic fits* since she was seventeen years of age. She had all sorts of treatment; went South, to Havana, to Europe; no beneficial results. After two years' persuading, she submitted to have the two lower wisdom teeth cut down upon and extracted ; cure permanent.

Mr. H., a neighbor, seventy-five years old, suffered from *hemicrania* and *tic douloureux*, extending to the right eyeball. For a period of three years, in which time he completely lost the sight of the eye, he was "teased" by his niece to consult me. He was a rough old man ; he wanted to know, "What can *a dentist* tell about these things, when all the surgeons who have examined my mouth say there is nothing the matter with it?" I had informed him that all his pains were caused by *spiculated* remains of fangs remaining beneath the gums, and were in process of being absorbed; hence the irritation of the dental nerves and their sympathetic irritations in the scalp, face, and eye. Finally, his sufferings were so acute that they compelled him to request me to examine his mouth again. * * * I cut down upon the upper jawbone, and took away three pinhead-sized spiculated ends of fangs. The operation caused the most excruciating agony, which I had fortunately foretold him. It is a singular circumstance attending the removal of these dento-causes of neuralgic affections, that the *after-pain* is of the most intense character, and lasts from ten minutes to *ten hours*, for which the operator gets not only the credit of being a magnificent bungler, but the "blessings" also of the indignant patient. Indeed, the dentist himself, like the patient, not being cognizant of this peculiar attending symptom, has his own confidential doubts upon the subject. From the time of the removal of the three spiculæ, now ten years, Mr. H. has never experienced a returning neuralgic symptom.

The niece of this gentleman and the daughter of Judge H., of Long Island, a beautiful girl, nineteen years of age, had been for several years "a martyr to neuralgic headaches"—*hemicrania*. She was "pa's pet." Judge H. insisted upon paying me ten thousand dollars if I could cure "pa's pet." I did effect a perfect and permanent cure for pa's pet by removing two teeth apparently sound, and filling two decaying teeth with gold. The judge "could not understand such a mode of procedure;" which showed that he was no judge in matters above his comprehension. "Pa" never paid me that ten thousand dollars, nor the first cent of a fee; and in addition he obtained an artificial set of teeth for his "dear"—to me—"wife."

Miss McC. had one superior central tooth remaining in her jaw. Artificial teeth replaced the lost teeth on both jaws; she was much annoyed by being "laughed at by her friends for a gouty old maid." Her foot and toe for a long time had been much swollen and very painful. She consulted me in relation to a constant slight *tickling* sensation at the root of the tooth, and at times a simultaneous throbbing in the tooth, with the pain-throbs in the toe-joint. I informed her that I was of opinion that the tooth was the original cause of her sympathetically affected gouty foot, but that I would not be positive on the point, as the crown and neck of the tooth and the gums also were both beautiful and sound in appearance. I struck the tooth a smart blow with a steel hammer, without producing any symptom. I applied a piece of zinc and silver to the neck of the tooth; a sharp, tingling shock was produced at the root and a simultaneous darting pain in the foot. I extracted the tooth. The apex of the fang (see cut of the split tooth) was spiculated with needle-like points, embraced by a small sac filled with fetid matter. The pain in the foot subsided within an hour and has not reappeared since,—twelve years.



1. Chamber of tooth filled with fetid pus.
2. Spiculated apex and sac of pus.
5. Side of fang partially atrophied.

These cases sufficiently illustrate the dento-neuralgic sympathetic affections, *wherein no warning diagnostic mark or symptom is experienced by the patients themselves to induce a suspicion that the dental organs are the exciting cause.*

Dento-neuralgic sympathetic affections appear in their greatest frequency, commencing with the wisdom teeth and proceeding, as near as I can form a table of causes, in their order here enumerated. The wisdom teeth, first, being the exciting cause seven times to one of the second enumerated cause, and so on, until they are affected as five hundred times to once of the thirteenth enumerated cause. Being confined to a limited space, I am compelled to relinquish the completion of my notes upon dento-neuralgic sympathies of the remote regions of the body, and confine my remarks to the immediate localities of the face, the forehead, the head, the neck, shoulders, arms, hands, and fingers, where the sympathetic affections of the teeth are most likely to be recognized by the practicing dentist.

TABLE OF EXCITING CAUSES OF DENTO-NEURALGIC SYMPATHETIC AFFECTIONS.

1st. Diseased wisdom teeth, and teething excitement when making their "*eruption.*"

2d. The absorption of the gelatinous tissue from the bone of the fangs, leaving their surface rough and the ends of the fangs sharp and spiculated.

3d. .The absorption of the dental sockets,—alveolar processes,—and by their covering gums being receded *below* the necks of the teeth, and below the bifur-

cation-separation of the fangs of the bicuspids and molar teeth. Being deprived of the natural nutritive, warming, protecting covering of the gums, the whole nervo-dental system is influenced—irritated—by numerous external agents, more especially those of atmospheric influences, causing neuralgic-rheumatic affection of face, neck, back of the head and shoulders, etc.

4th. Atrophy, or wasting of the fangs of the teeth, and the gradual death of the fangs, leaving spiculated apexes, or points.

5th. Abrasion, and exposure of the necks of the teeth.

6th. Injuries done by arsenious acid, aconite, chloride of zinc, carbolic acid, etc., when accidentally or imprudently used beyond the vital force of the teeth.

7th. Constitutional irritations, and those caused by mercury, iron, iodine, arsenic, quinine, etc., when used to excess.

8th. Electro-galvanic action of compound metals filled into teeth; and the electro-galvanic action of alloyed metals used in soldering platina, gold, and silver plates, and soldering artificial teeth to such plates, by badly alloyed solders.

9th. The dead, poisonous matter of decomposed nerves confined within the chambers of the teeth.

10th. The too rapid wearing down of the crowns of the teeth, not permitting the nerves sufficient time naturally to recede.

11th. The dead roots or fangs of teeth, spiculated by the action of the absorbents.

12th. Hypertrophy or enlargement of the fangs, and the consequent absorption of the alveoli, causing nerve irritation.

13th. The absence of the teeth, causing an unnatural closing of the jaws and an overshutting of the joints upon their sockets, as a door strained by overshutting upon its hinges, irritating the third branch of the fifth pair of nerves.

14th. By deep "air-chambers" applied to plates for artificial teeth for the purpose of increasing the atmospheric pressure upon them, by which a constant irritation is produced upon B C and fig. 1, Plate I.—the filaments of the second branch of the fifth pair of nerves spread through the roof of the mouth.

These are some of the exciting causes by which the essential points for the basis of a correct diagnosis of the many pains and rheums appearing without any other apparent cause may be recognized, and which, as I have demonstrated, are dependent upon and arising from a source hitherto entirely overlooked. I can cite many cases in which patients, for years, have been subjected to the most harassing and distressing treatments,—narcotics, stimulants, sedatives, irritants, and counter-irritants, "nervines," carbonates, phosphates, acids, alkalies, tonics, iron, arsenic, mercury, quinine, phlebotomy, cupping and leeching, drastic alteratives and aperients, cold and warm, sulphur and vapor, Russian and Turkish baths, and sea-bathing, Sharon and other springs, electricity, the knife, the division and *excision* of the nerve; then homœopathy, hydropathy, "water-cure;" then mesmerism, spiritualism, clairvoyance, quack medicines, and the kindred sciences, have in their turns promised to effect a certain cure. If the wretched sufferer has had vital force sufficient to endure and withstand these dreadful assaults upon his poor frail citadel of flesh and blood, so wonderfully made and so resistingly combined, it has been to sink into a state of apathetic melancholy

or hopeless despair. In many instances, as I have shown, the tortured patients, at last, have been relieved and cured of their misery by the removal of diseased wisdom teeth or spiculæ of fangs hidden beneath the gums.

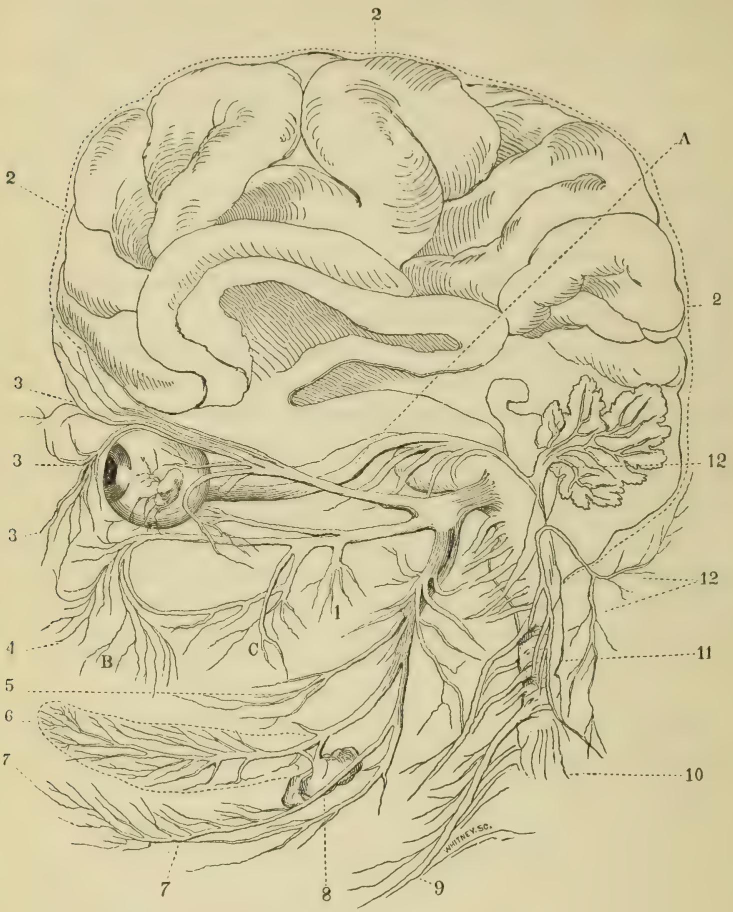
The three accompanying plates furnish maps of the outlines of the great fifth pair of nerves, a portion of the seventh pair, and the cervical or neck nerves, and their several most important branches, without enlarging upon their increasing numerous offshoots and anastomosing-communicating filaments conjoining with other equally important nerves. They are introduced here for the purpose of demonstrating the sympathetic points and the relative positions of neuralgic symptoms, pains in the integuments of the jaw, head, neck, etc. For example, letter C, Plate I., represents the nerve of the upper wisdom tooth; the tooth is the cause of the nerve irritation; the *pain is not experienced in the wisdom tooth itself*, but, like the distribution of an electric wire, it is distributed to the other extremity or extremities, at some of the extreme branches, the sentient filaments of the nerves to the eye and nose (see fig. 3, 3, 3), or to the various other points on the forehead, temple, face, ear, back of the head, to the throat, chin, etc. figured in Plate III. Again, letter C, Plate I., the nerve of the wisdom tooth is in a state of irritation, and no pain has ever been experienced in the tooth to cause a suspicion that it is defective or affected, but pain is felt in the nerves of the teeth between it and the front teeth at letter B. At this moment of writing I have just extracted a wisdom tooth from the mouth of a lady friend, who has lost the two bicuspid teeth and a molar tooth, which were sound and perfect in every respect, but supposed to be defective, because in them was the apparent seat of pain. I had a quarrel with the patient on this point, she insisting that the molar sound tooth was the offending cause, until I passed an instrument into the nerve of the wisdom tooth and *convinced* her to the contrary.

Dento-neuralgia affects any *one* of these remote points of nerves sympathetically, or any *number* of them, or all of them together, according with each peculiar neuralgic affection. Sometimes it is "rheumatism" in the jaws, at other times in the face, again over the scalp, in the neck—"stiff neck;" rheumatism in the shoulders, in the arms, hands, fingers, etc., often attended with numbness, pricking sensations, as if the hand or arm were "asleep," creeping sensations upon the skin, as if insects were crawling, or a piece of silk thread or a cobweb were adhering to the skin; *pain in the eye, muscæ volitantes*, or motes, or rings, or disks floating before the eye; pain in the temple, in the ear, and upon the apex of the head, etc. The dento-neuralgic symptoms thus extend their impressions to all parts of the body.

The most frequent neuralgic sympathetic pain is in the temporal region, in the eye, in the ear, and upon the crown of the head, arising

PLATE I.

ORIGIN AND DISTRIBUTION OF THE GREAT FIFTH PAIR OF NERVES.



EXPLANATION OF PLATE I.

This plate represents a section of the brain showing the origin of the great fifth pair of nerves, or GRAND SENSITIVE NERVE OF THE HEAD AND MOTOR OF THE JAWS, and the distribution of their principal branches, the sentient points of which are the sympathetic points where dento-neuralgic symptoms (or pain) are experienced, and which, to a limited extent, are more detailed by the nervous branches distributed. (See Plates II. and III.)

A. The optic nerve. Nerve of vision.

B. The anterior or front nerve branches of the second branch of the fifth pair of nerves supplying the right side front teeth.

C. The posterior or back branches of the same branch of the fifth pair, supplying the back teeth, including the wisdom teeth.

from a diseased wisdom tooth on that side of the head where the pain is experienced. The pain is also sympathetically experienced in the *sound* teeth anterior to the affected wisdom tooth, which is in no way suspected of being the offending cause in any of these sympathetic symptoms. Thousands of sound teeth are thus sacrificed without any real cause. I have many contentions with patients upon this point. They want me to extract or to treat sound teeth as the offending organs, and when I inform them that they are mistaken, they look at me in wonderment, and often ask me if I take them "for fools" or "simpletons," that *they* cannot tell, and that they do not know where and in which tooth they feel the pain. Of course I am the victor in the end.

Thirty-five years ago my attention was attracted to dento-neuralgic sympathetic pains occurring in remote parts of the body. I have since devoted all the attention that time and opportunity would afford to glean such data as would elucidate the subject, and the proper treat-

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Fig. 1. The palatine nerves of the same second branch, supplying the muscles of the palatine arch, tonsils, etc.

Figs 2, 2, 2. The strong membrane inclosing the brain, the dura mater.

Figs. 3, 3, 3. The first great branch of the fifth pair giving off the OPHTHALMIC branch of nerves, the frontal, or supraorbital, the nasal, and the lachrymal nerves.

Fig. 4. The nerves of the lip from the second branch of the fifth pair, or great maxillary nerve of the upper teeth. These nerves anastomose—mix with and join—with the seventh pair of nerves.

Fig. 5. Linguo-amygdaline and pharyngeal nerve of the great third branch of the fifth pair of nerves.

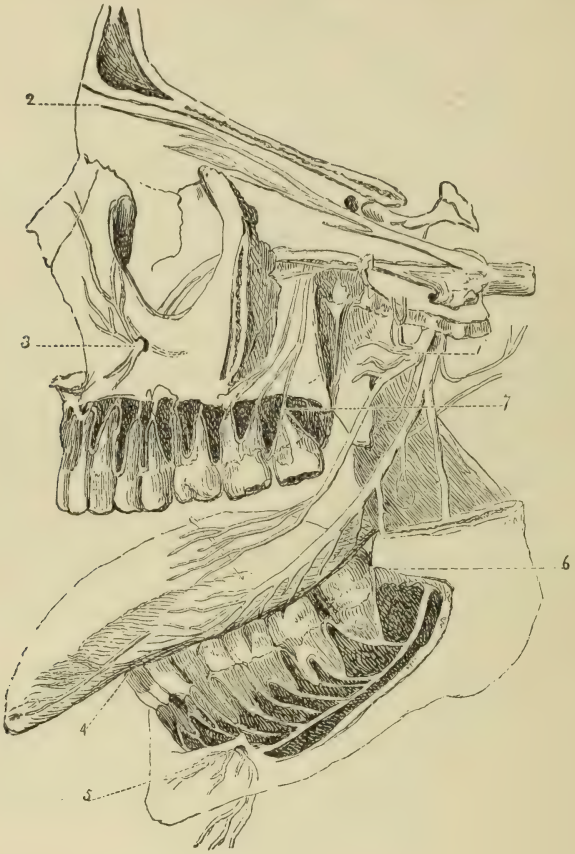
Fig. 6. The gustatory nerve of taste descending to the tongue; it is joined by a branch of the *chorda tympani* nerve, and unites with the *portio dura* of the seventh pair of nerves as it is passing through the ear. The gustatory nerve sends off twigs to the salivary glands and muscles situated betwixt the jaw-bone and tongue, and finally communicates with the ninth pair of nerves, which we find has connection with the eighth pair of nerves, with the spinal, accessory, and sympathetic, the cervical and phrenic nerves.

Figs. 7, 7. The lower maxillary nerve as it passes through the lower jaw-bone giving off twigs to the teeth, and then emerging from the *mental hole*, dividing into two branches, and distributing their fibrils to the chin, lower lip, throat, etc. The sublingual gland.

Figs. 9, 10, 11, 12. The tenth, eleventh, and twelfth pairs present the suboccipital nerves and the four cervical nerves. High in the neck and under the jaw they are connected with the *portio dura* of the seventh pair, and with the fifth pair, the *dental nerves*, and with the eighth and ninth pairs. The fourth cervical nerves, fig. 10, with the third cervical nerves, fig. 9, and fifth cervical nerves, not illustrated on the map, form the origin of the PHRENIC NERVE of the diaphragm, an important organ of *respiration*. These anastomose (connect) with the other cervical nerves and first dorsal nerves, forming the brachial or intricate AXILLARY PLEXUS of nerves, which extend to the arm, forearm, hand, and fingers.

PLATE II.

THE DIRECT COURSE OF THE FIFTH PAIR OF NERVES FROM THE BRAIN TO THE TEETH.



Explanation of Plate II.

Fig. 1. Post musculi-alveoli nerve.

Fig. 2. The frontal or supraorbital nerve passing from the superciliary foramen and spreading over the forehead.

Fig 3. The facial nerve as it emerges from the infraorbital foramen, after having given off twigs to each tooth of the upper jaw.

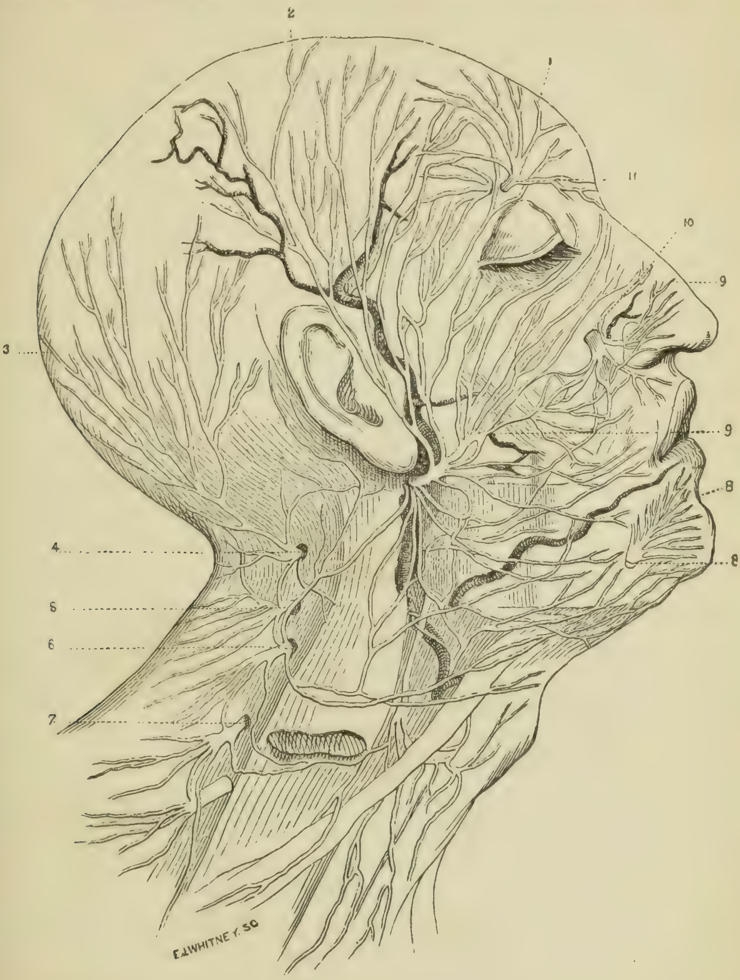
Fig. 4. The gustatory nerve—nerve of taste passing along the side of the tongue.

Fig. 5. The lower maxillary nerve emerging from the mental foramen of the jaw-bone, after having given off twigs to each of the lower teeth.

Figs. 6, 7. The lower and upper wisdom teeth.

PLATE III.

THE SUPERFICIAL DISTRIBUTION OF THE LARGER BRANCHES OF THE FIFTH, AND PORTION OF THE SEVENTH, IN CONNECTION WITH THE NERVES OF THE NECK AND THROAT.



EXPLANATION OF PLATE III.

Figs. 1, 11. The frontal nerve and branches distributed over the forehead.

Figs. 2, 9. The great transverse or temporal, parietal and facial distribution of the seventh pair of nerves, and their connecting or anastomosing with the fifth pair of nerves.

Fig. 3. The distribution of the occipital nerve over the back part of the head.

Figs. 4, 5, 6, 7. The neck—cervical—nerves and their connecting branches which lead to the arm, forearm, hands, and fingers.

Figs. 8, 8. The mental nerve spreading over the forepart of the throat, over the chin, lower lip, and finally joining the nerves of the face, etc.

ment for their cure. The results of my investigations have been many, the details of which my limited space prevents me entering upon; one of which, however, will be found of great practical use to the surgeon dentist. *It is the obtunding or benumbing the extremities of the temporal nerves for painless extraction of teeth from their sockets* or jaws. I have adopted its application for the last thirty years with complete success, never having used or countenanced the exhibition of chloroform, ether, or nitrous oxide gas for this *minor* surgical operation. The benumbing, or *mechanical anæsthesia*, of the temporal branches of nerves obtunds the whole nerve to a sufficient extent to allow the teeth to be removed with sensation so slight, which, if not attending a special surgical operation, would scarcely be noticed by the patient. One of two modes may be adopted. Application of ice to the temples, which is somewhat distressing, the sensation of cold striking deeply. The other, to which I give the preference, is done by an assistant, with each of his middle fingers pressing their points (of the fingers) with persistent firmness and force into the *fossa* or hollow behind the ridge of the temporal bone, which forms the external bone circle orbit of the eye. Pressure for one minute is all that is necessary. The practice is as simple as it is harmless, and leaves no after unpleasant sensation to annoy the patient. It is an instinctive method often adopted by people themselves, who press their temples with their fingers to relieve themselves temporarily of the acute paroxysms of nervous headache. This temporary pressure, with sufficient force, is all that is required to remove teeth painlessly. Moreover, it obviates the danger attending the administering of chloroform, ether, laughing gas, etc. by ignorant, clinic-educated, "accomplished" (!) dentists, such as Dr. Daboll (M.D. !) describes, who attend dental clinics, but never attend school. Read what a circular says, thrown into my *sanctum* as I am writing, asking for my patronage. It is over a name with the initials D.D.S. added thereto, which, in this instance, certainly must mean DOCTOR OF DENTAL STUPIDITY, or worse. "LAUGHING GAS FOR THE NERVOUS AND DELICATE." "In the past three years," says the circular, "I have administered the *gas* to persons afflicted (!) (AFFLICTED is a good word) with *heart* and *lung* diseases, and many of them in very delicate health." It would be a queer phenomenon to find *heart* and *lung* diseased persons in a robust state of health. Two deaths have occurred in dental offices in this city within the last three years, the victims of heart and lung disease, but prematurely finished off by "laughing gas." Upon one an inquest was held; the other was "hushed up." We remember the cry of "Free trade and sailors' rights," but here we have a D.D.S.—heaven save the mark !—in defiance of all legal, moral, and medico-physical laws and science, advertising his peculiar merits to perpetrate this *grave* offense upon the ignorance and credulity

of "an enlightened public," and upon diseased, harmless patients; yet in all scientific gravity he asks *medical men* to patronize his peculiar specialty.

I need not enlarge upon the importance, nor recapitulate the offices of the grand sensitive nerve of the head. It is only necessary to remind the reader that the fifth pair of nerves goes everywhere, to the head and face externally and internally; that it is universally the nerve of common sensibility; that it possesses the peculiar *gustatory* sensibility of this nerve-branch; that it gives sensibility to the surface of the eye; and that it is the nerve of the muscles of the jaw.

Of the whole nervous system, perhaps there is no other nerve thought less about, or more trifled with, irritated, or treated more recklessly. This great sensitive nerve appears to be the foot-ball of every broken-down tradesman who "gets up a new infallible hair restorative and hair dye" made of *paralyzing* poisons; of every simpleton who thinks eyes without "*speculation*" (expression) in them is beauty, and who poisons them with *belladonna;* of every hair-bleaching barber; of every tag-rag, bob-tail artisan, etc. who, as a *dernier ressort,* takes up the art of dentistry, and attends *dental clinics* to obtain a *modicum* of knowledge with which to present himself as a professor of dentistry in his own office, where, with reckless ignorance and with Sir Oracle importance, he poisons nerves with arsenic, aconite, chloride of zinc, etc., without a particle of knowledge of any difference in their character or of their appropriate application; while he "destroys nerves" as if they were so many rats hidden in holes; or, at a venture, he extracts every good tooth to replace them with what he terms a "new denture."

I may be permitted here to remark upon the grave error and injury being done to the character and progress of the dental profession by what is termed "*dental clinics.*" For very many years we have had well-established DENTAL COLLEGES in PHILADELPHIA and BALTIMORE, with other schools of lesser note, where the honest dental student, devoting his time, his money, and application to his collegiate studies, can and does acquire all the preliminary learning, theory, and practical knowledge necessary to form a substantial basis upon which to build his future professional progress and reputation.

Many young gentlemen, imbued with this laudable and exalted ambition, avail themselves of these opportunities and advantages. After years of zealous toil, in the full faith that they have alike done justice to themselves, as well as to their intentions of doing the same to the character of the profession they have selected, and to those who may confide in their professional capacity, knowledge, and abilities to serve them, what do they find as their reward for their sacrifice of time, money, and application? What is the incentive to others to follow their scrupulous example? Their reward is to find. after all their sacrifices,—

for sacrifice it is under the present system,—that a certain number of ORACLES "get up dental clinics" in the highways and in public places, and there invite tag-rag and bob-tail dentists *par excellence*, who have not the slightest claim upon them or the profession, who have never matriculated, and who have never been to school, to come and see how *they* fill teeth. This is the Alpha and Omega of their clinics. We never find these "clinics" filling the teeth of the *cachectic*, the *anæmic*, and the *nervous*. No, the patients are iron-jawed gentlemen "without nerves," that can sit still and keep open their mouths for hours together, and have their teeth sledge-hammered all the time without wincing,—to say nothing of the superabundance of eager assistants to aid the success of the operations. The clinical student and the self-graduated dentist, who has never expended a moment to study or a penny to attend a dental school, who jumps from a fishmonger's stand or from a dry goods yard measure, is your "cheap dentist;" he poisons teeth with arsenic, aconite, and chloride of zinc, and poisons the jaws and nerves too. He administers nitrous oxide, or laughing-gas, "free," "gratis," "for nothing," warranted better prepared and more pure than can be found in any other shop. He wears diamond studs, perfumes his hands, pomades his hair, and travels upon his beard and handsome person, *i.e.* shirt front, while the professional dental student starves, or becomes "*assistant*" to some successful ignoramus, or is exiled from his home. Thus dental clinics are PROFESSIONAL DESTRUCTIVES. They not only do a gross injustice to our dental schools, but to the oracles themselves, who make themselves public *peripatetic* teachers in profitless but injurious competition with our dental colleges. COLLEGIATE CLINICS are not only right, but they are due to *matriculated students*, and to them alone—not to outsiders.

My "Notes," etc., for a Memoir on the Pathology of the Teeth, may not be acceptable—pleasing—to all the profession as it is constituted. But they will be recognized by those actuated with the desire—as I am—of seeing the profession in its proper position and enjoying its proper status in public estimation, and by the faculty, with the other specialties of the healing art. To attain this end, I claim to be influenced by the highest professional feeling. In speaking and demonstrating the truth, therefore, I do not court applause, nor do I expect any profit for speaking the truth; at the same time I do not fear to meet the frowns of any man for doing so. If my "Notes" do not stand the test of scrutiny, my wish is to have them disregarded and exploded, as the imaginations of a visionary. But, on the contrary, if they rest—as my experience tells me they do—on the immutability of truth, it behoves every dentist, every lover of his profession, and every medical practitioner, to award them that weight and consideration which their importance demand, and by *their* additional experience and observations to continue the work until it shall be demonstrated perfectly.

THE CELLULOID BASE.

BY PRETERRE BROTHERS, NEW YORK.

We have the pleasure of communicating the result of a series of carefully conducted experiments, by which we are enabled to simplify and improve the process of moulding plates out of "The Celluloid Base," so that now it can be used for dental plates with perfect success as a substitute for rubber.

As we do not intend to take out patents for our improvements and discoveries, but wish our friends to share in the advantages they produce, we will describe the details of two processes (either of which may be used) of moulding dental plates, in which we dispense with all the usual machinery, except the flask and screws.

We prepare the flask, cut the channels and gates for the escape of the surplus material, select the plate for the base, and place it over the mould in the flask, according to the printed directions for using the celluloid base, with the exception that no gum is mixed with the plaster of which the mould is formed. Then commence our improvements; in both of these processes the ordinary rubber flask can be used as well as the special one designed for the celluloid base. In neither of them is oil used as the medium of communicating heat to soften the material, and in both of these processes the plaster mould must be ordinarily moist.

In one process the flask and material, prepared as above described, are plunged into boiling water; almost as soon as the boiling water touches the material it begins to soften, and the tightening of the screws can commence, and they may be further tightened every half minute, until the edges of the flask are pressed close together, when the moulding will be completed, and the flask must be plunged in cold water to cool the case. Upon opening the flask, the plate will be found as perfectly moulded as if it had been immersed in *oil* at a temperature of three hundred degrees. We have moulded plates by this process in five minutes.

In the other process, the plaster mould in the flask must be moist, the material for the base is placed on the mould in the flask, the upper part put on, and the flask so prepared placed over a jet of gas, or the flame of an alcohol lamp; as soon as the steam begins to issue from the wet plaster, the material will be soft enough to commence tightening the screws, and in a few seconds the two parts of the flask may be brought entirely together, and the moulding of the plate will be completed, and the case must be cooled as already described.

In the last process, the channels and gates that are cut to receive the surplus material must be so arranged that none of it can touch the iron

flask, as the flask becomes so hot that the material would ignite if brought in contact with it, and the case be spoiled. Should the material by any accident ignite, plunge it into cold water. If this is done quick enough, the case may probably be saved.

We think it is a matter for congratulation, that in the different preparations of collodion that are known by the name of "rose pearl," "pyroxyline," "the celluloid base," etc., the profession can find substitutes for rubber in the making of dental plates.

So that the aims of those extortionating companies may be defeated, we shall always place before our friends any improvements that we may make that will tend to accomplish that object.

MATRICES FOR PROXIMAL FILLINGS.

BY WM. H. COOKE, CLEVELAND, TENN.

In the April number of the Dental Cosmos, Dr. Louis Jack, of Philadelphia, gives his admirable plan of preparing and using "Matrices for Proximal Fillings;" and those who have never used such appliances would do well to try them, and realize the advantage thereby gained.

For the benefit of those who do not wish to take the time and trouble to prepare such appliances as are described by Dr. Jack, I give my simple plan:

Take a worn, safe-sided separating file the thickness desired, and hold it in a spirit-lamp till red; then cut a piece of sufficient length and bend with round-pointed pliers to desired shape of filling when completed. The cavity properly prepared, if the cervical wall does not extend below the gum, wedge and force the matrix down upon it. If, however, the cavity extends below the gum, cut the under edge of appliance to a circular shape, apply a rubber dam, and force the matrix quite below the cervical wall. In either case, hold the appliance firmly in position by a wedge driven between the adjoining tooth and file-side of the matrix.

An appliance of this kind can be prepared in five minutes, and in a short time an operator will accumulate a sufficient number to fit almost any case that will be presented.

I make the foundation of the filling with Watts's sponge gold, cut into suitable blocks or pieces, and mallet thoroughly. I use the sponge because, in most cases, I can make the foundation without drilling retaining-points. I build up the filling with No. 4 soft foil, made into ropes, cut into pellets, and annealed on a wire gauge over a spirit-lamp. This plan of annealing gold I learned of Dr. J. Fouché, of Knoxville, Tenn., and to those who have never tried it, I must say, give it a fair trial, and I think you will never use gold annealed in any other manner.

THE PERKINS-HYATT (CELLULOID) BASE.

BY GEO. L. RAUCH, D.D.S., PHILADELPHIA, PA.

As this new base, which promises to produce a revolution in dentistry, is as yet little understood among the major part of our profession, we offer the following suggestions pertinent to its use. :

We find it to be one of the cleanest and lightest, and the least trouble in working of any base yet introduced. It takes a sharp impression, and compares favorably in this respect with the objectionable rubber.

The camphor smell spoken of we find to be very slight after being cast, and patients tell us they do not recognize any taste of it. Another objection which has been urged against it is, that it is liable to warp or shrink in use. This will take time to test; but fearing that it might, we made experiments to counteract it, and find that it will not when used with metallic plates. Aluminium may be spurred, after being struck up in the usual manner; and when placed in the moulds (flasks), a small quantity of the base will be sufficient to attach the teeth, presenting a light, clean, and substantial substitute for rubber or other bases.

Gold or silver may be used by attaching pins or staples, similar to stays in continuous gum-work.

Hoping these suggestions will stimulate experiment, we give them, with the wish that we shall have no patents on this method.

PROCEEDINGS OF DENTAL SOCIETIES.

STATE DENTAL SOCIETY OF PENNSYLVANIA.

The third annual meeting of this body was held at the Springs Hotel, Gettysburg, commencing June 13, 1871. The President, Dr. Jno. McCalla, of Lancaster, in the chair.

Members present: Drs. W. N. Amer, C. B. Ansart, H. W. Arthur, C. H. Bagley, G. T. Barker, C. D. Elliott, M. E. Gillespie, A. F. Herr, J. Z. Hoffer, P. W. Heistand, Jno. McCalla, J. G. Moore, G. B. McDonneld, E. M. Pierce, A. B. Robbins, J. S. Smith, W. H. Scholl, J. G. Templeton, Saml. Welchens, M. H. Webb, and J. D. White.

A majority of the Board of Censors being absent, the following members were, on motion, substituted, viz.: Drs. W. N. Amer, W. H. Scholl, and M. H. Webb.

The following new delegates were admitted to membership, viz.:

Harris Dental Association.—Drs. E. K. Young, J. A. Martin, F. Hickman, and J. L. Hill.

Lake Erie Dental Association.—Drs. J. B. Humes, W. M. Martin, and F. Herrick.

Pittsburg Dental Association.—Drs. H. J. Chandler and J. O. Flower.

Lebanon Valley Dental Association.—Dr. S. H. Guilford.

Cumberland Valley Dental Association.—Dr. D. S. McCoy.

Odontographic Society.—Dr. Chas. J. Essig.

Pennsylvania Association of Dental Surgeons.—Dr. Robert Huey.

Susquehanna Dental Association.—Dr. J. M. Barrett.

The amendment to the constitution, proposed by Dr. Robbins and laid over from the last meeting, was then taken up.

The amendment is as follows, viz.: "Any member of the State Dental Society in good standing may, upon passing a satisfactory examination by the Censors, with the approval of the society, receive a certificate constituting him a '*Fellow of the State Dental Society of Pennsylvania*,' under seal, signed by the Censors, President, and Secretary."

On motion of Dr. Welchens, the consideration of the amendment was postponed.

Dr. Robbins announced the death of Dr. Snow (of the Snow and Lewis plugger), an old member of the Lake Erie Dental Association.

Tuesday Evening.

President in the chair.

The bill to regulate the practice of dentistry in this State was then taken up. Committee reported that they had endeavored to secure the passage of the bill but had failed, mainly from opposition to the ten-year section.

Dr. Robbins thought best for the bill to lay in committee rather than to have it reported negatively.

Dr. McCalla thinks the prospect better for its passage next winter.

Dr. Barker expressed his satisfaction with the report of the committee, and the interest excited in favor of the bill throughout the community, and prefers securing its passage on its own merits.

Dr. Robbins said the agitation had raised the standard of dentistry in the State almost as much as if the law was passed, for dentists feel that it is coming and are preparing for it.

Dr. Templeton thinks at least one dentist from each county in the State should visit Harrisburg and use his influence in favor of the bill.

Dr. Scholl said the letter which Senator Davis received was in opposition to the first bill, and that he, as chairman of the committee to which the bill was referred, refused to report the bill affirmatively because of said letter.

Dr. Webb thinks the opposition of many concerning the bill is based upon the provisions of that first presented, they not having had an opportunity to examine the bill last introduced. He favors a bill that will require all entering the practice of dentistry, after a given time, to be graduates of a reputable dental college, and thinks such a bill would not meet with opposition.

Dr. Moore thinks the greatest opposition to the present bill is called forth from its retrospective character.

On motion of Dr. Templeton, the Committee on Bill was continued

On motion, the committee was instructed to procure an amendment to the act of incorporation, changing the name of the society to that of the Pennsylvania State Dental Society, because the societies of other States have the name of the State first.

Dr. McCalla reported that the Committee on Seal had therefore taken no action.

On motion, the committee was continued.

Dr. Robbins's proposed amendment, to allow the society to confer degrees, was again taken up, when, on motion of Dr. Barker, it was laid on the table.

Dr. Jno. McCalla delivered his annual address as retiring President.

Wednesday Morning.

President in the chair.

A committee, consisting of one from each association represented, was appointed to nominate officers for the ensuing year. The following gentlemen were nominated and elected, viz.:

President.—Dr. J. G. Templeton, New Castle, Pa.

First Vice-President.—Dr. M. E. Gillespie, Pittsburg, Pa.

Second Vice-President.—Dr. J. M. Barrett, Wilkesbarre, Pa.

Recording Secretary.—Dr. C. H. Bagley, Meadville, Pa.

Assistant Recording Secretary.—Dr. C. B. Ansart, Oil City, Pa.

Corresponding Secretary.—Dr. Samuel Welchens, Lancaster, Pa.

Treasurer.—Dr. John McCalla, Lancaster, Pa.

Board of Censors.—Dr. A. B. Robbins, Meadville, Pa.; Dr. S. H. Guilford, Lebanon, Pa.; Dr. Charles J. Essig, Philadelphia; Dr. D. S. McCoy, Newville, Pa., and Dr. H. W. Arthur, Allegheny City.

The following delegates to the American Dental Association were also elected, viz.:

Drs. Amos Wert and John H. Githens, of Philadelphia; Dr. F. Hickman, of Reading; Drs. M. H. Webb and J. G. Moore, of Lancaster; Dr. G. B. McDonneld, of Conneautville, and Dr. A. B. Robbins, of Meadville.

Delegate to the Ohio State Dental Society.—Dr. J. G. Templeton, New Castle.

The President, with the approval of the society, appointed the following committees:

Executive Committee.—Drs. W. E. Magill, G. B. McDonneld, E. M. Pierce, J. G. Moore, and J. Z. Hoffer.

Publication Committee.—Drs. C. H. Bagley, Samuel Welchens, John McCalla, Wm. Nichols Amer, J. D. White, and A. B. Robbins.

Prof. G. T. Barker read an essay on "Irregularities of the Teeth: Circumstances favoring it, and Suggestions on its Prevention and Treatment." He advocates correcting irregularities by means of bands and ligatures, without the use of plates; never attempts a case until the patient is anxious to have the irregularity corrected, for by securing the patient's co-operation our success is half assured. By the use of plates we lose much time, as patients often remove them. This method of correcting irregularities is simple, yet we must study the law of forces. When teeth are only partially erupted, the essayist would bring them down by applying ligatures at the margin of the gums. He would make room by extracting a bicuspid on either side if the arch was too small.

Dr. Essig takes correct impressions, gets up plates, and covers the molar teeth with caps, extending slightly beyond the margin of the gums. To this, on either side of the mouth, he attaches a band of platina or gold, which passes around in front of the alveolar arch. He attaches small buttons to the band, about opposite the irregular tooth or teeth, to which ligatures are attached, passing to the teeth to be moved. The direction in which the force should be applied will determine the position of the button.

Dr. Guilford says that when some teeth are capped others will elongate, and interfere with the articulation, if the appliance be worn too long.

Dr. Robbins thinks the use of ligatures frequently applicable, but cannot always be employed; objects to extracting teeth for the correction of irregularities, as it assists in the contraction of the jaws. Would rather expand the jaw, and make room for those teeth which are crowded out of the arch. When using the appliance described by Dr. Essig, he does not use the buttons, but ties ligatures around the band, to which he attaches the other ligatures, and sometimes perforates the bar.

Wednesday Afternoon.

Dr. Templeton in the chair.

On motion of Dr. Welchens, the discussion on Dr. Barker's essay was postponed until Thursday morning, and the rules suspended, that all new and miscellaneous business might now be disposed of.

It was suggested that the time of meeting be changed, as it now takes place about the most busy time with the dentists of the cities. It was agreed that when the amendment to the constitution be made, it be to strike out the clause fixing the time of meeting and insert it in the by-laws. It was resolved that when the society adjourns, it be to meet on the first Tuesday in June next.

Dr. Reading, from the New Jersey Society, was welcomed, and invited to participate in the discussions.

The following amendment to the constitution was offered, viz.:

To amend the constitution, art. 4th, sec. 1, to read: "The society shall hold an annual meeting at such time as the by-laws shall provide."

Dr. S. H. Guilford, of Lebanon, read an essay on "Mechanical Abrasion of the Teeth," and recommended as a remedy the wearing of a metal plate covering the roof of the mouth and the abraded surfaces of the teeth.

Dr. Moore thinks rubber would be a better material on account of its being a non-conductor.

Dr. Robbins said that often in these cases we find apparently a chemical action and destroying influence set up, so that some teeth are worn away more than others; had formerly made a cap to cover and protect the tooth until secondary dentine was thrown out; now prefers filling with gold, using the mallet, and, if necessary, destroying the pulp.

Dr. McDonneld prefers filling such teeth, but does not advocate always building to the original length, and restoring the contour; frequently simply fills flush with the edge.

Dr. Hoffer thinks the abrasion of teeth is not caused solely by the chewing of tobacco, but that it produces a disorder of the nervous system, which causes the grinding of the teeth during sleep. He thought the attrition was not due so much to the small particles of mineral substance in the tobacco as to its chemical influence.

Dr. Guilford said that, in one of the cases mentioned in his essay, the teeth were very strong and dense. The cause of the upper teeth becoming more abraded than the lower, is due to the latter being smaller, and having less of the dentine exposed.

Dr. Moore said that we very rarely see cases of abrasion in the mouths of females.

Dr. Welchens thinks that when there is no direct mechanical cause, it is by reason of a reduction of vitality, especially as persons advance in life; thinks that in most cases the abrasion is attributable to the use of tobacco.

Dr. Robbins said that abrasion sometimes continued after persons quit the use of tobacco.

Dr. Welchens had not noticed this, but thought it was due to decreased vitality after the person had discontinued the use of tobacco.

Dr. Moore in one case found the teeth had been much decayed, but decay had ceased, and what was naturally the softest had become the hardest.

Dr. McDonneld thinks tobacco has more to do with abrasion than anything else. Abrasion, however, sometimes occurs when no tobacco is used, but is not so extensive.

Dr. Elliott recalled a case where the abrasion continued after the discontinuance of the use of tobacco.

Dr. Hoffer had seen one or two similar cases.

Dr. Robbins recalled the case of a physician who had used tobacco for forty years, and after discontinuing its use his teeth wore down more rapidly than before. In the South, where persons do not allow the tobacco to lay quietly in the mouth, but keep it constantly in motion, the abrasion of the teeth is the rule, and not the exception.

Dr. Young thinks the reason of the upper teeth becoming more abraded than the lower is by reason of the lower jaw being movable, and the lower teeth not having so much of the dentine exposed. The lower teeth operate upon the upper as the hammer upon the anvil.

The Publishing Committee were instructed to publish five hundred or more copies, at their discretion, of the transactions of the society from its organization to the close of the present session, in one paper-covered pamphlet; and that the same be furnished to members of the society at cost.

The following resolution was adopted, viz.:

Resolved, That a committee, consisting of five, be appointed to revise the constitution and by-laws, and report at next meeting, provided that a law is passed to regulate dental practice before such meeting.

The chair appointed the following committee, viz.: Drs. Robbins, Welchens, McCalla, Amer, and Hoffer.

Wednesday Evening.

Mr. J. D. Crosthwaite, from S. S. White's establishment, gave a practical demonstration of the "Celluloid Base" (Perkins-Hyatt), which was satisfactory in every particular.

Thursday Morning.

The Treasurer, Dr. Barker, presented his report, which was approved.

Dr. Samuel Welchens read an essay on "Definite Human Structure." The essayist entertains the opinion that the teeth of man are the highest type of organized matter.

Dr. Barker thinks the dentinal structure of man is not superior to that of the gorilla. The nervous system, too, in some animals is similar to man; that of the chimpanzee resembling that of man, and not only this, but the vocal organs also are similar. The dog has memory, shame, and fear, as in man, differing only in degree. There is a retrograde metamorphosis in the human teeth. There are no really perfect sets of teeth.

Dr. Welchens denies that there is retrograde metamorphosis. By proper modes of living there is sufficient power in the system to develop a perfect denture.

Dr. Barker said that if we improve the general health of patients, and

secure increased nutrition, perfect teeth could finally be obtained. We must also advise against the marriage of unhealthy persons. The jaws of Americans are almost universally narrow, and it is almost impossible to preserve all the teeth. The second molars are usually better than the first, because, just before the development of the first molar, there is a greater demand for osseous material to build up the general structure, and, as the teeth are only appendages, they suffer; thinks best therefore to sacrifice the first molar sometimes when there is an overcrowded condition of the jaws, and especially when the tooth is very defective.

Dr. Robbins thinks that the first molar should by all means be preserved to secure a better development; does not advocate its removal in the correction of irregularities; and if it be defective, would remedy the same by proper treatment and filling.

Dr. Moore thinks that the extraction of the six-year molars should be only resorted to as the lesser of two evils,—the deterioration of the teeth and the narrowing of the jaws.

Dr. McDonneld advocated the preservation of the first molar. If the attempt to save it failed, the treatment was not commenced early enough.

Dr Guilford thinks that when defective six-year molars are retained the other teeth are injured; does not wish it so, but thinks, with Dr. Barker, that the day will come when such defective first molars will be extracted.

Dr. Essig explained the manner of using Dr. Jack's matrix. Teeth are first separated by chisels or otherwise. He uses Turkish boxwood wedges. Form the cavity, smooth the surfaces, and insert the matrix. When an approximal tooth is out, take an impression, and make a matrix of rubber, fitting up against the surface of the tooth to be filled, or against the matrix, placed in position, and extending to the nearest tooth. When a tooth is isolated, a band of a suitable material may be fitted around it. With the matrix a filling may be made more solid than in any other way.

Dr. M. H. Webb read an essay on "Anæsthesia."

Thursday Afternoon.

Dr. Guilford coincided with the essayist; has used nitrous oxide principally; thinks it the best anæsthetic we have for minor operations, and safer than ether or chloroform; thinks it more convenient to use the small rubber bag, but has a gasometer. In this he differs from the essayist.

Dr. McDonneld has given ether, chloroform, and nitrous oxide, but deprecates the use of any anæsthetic when it can be avoided; has noticed injurious effects following the use of these agents. These

effects may not be noticed until some time after the administration of the anæsthetic.

Dr. Welchens. Nervous affection sometimes follows the extraction of teeth without anæsthetics. He sanctions the views of the essayist; thinks the shock of the operation in most cases is more injurious than anæsthesia; uses a mixture of ether and chloroform; has not administered nitrous oxide to any great extent, and does not succeed so well as with the mixture of ether and chloroform, having administered the latter for about twenty years. He related a case of a young person whose nervous system was much excited; extracted two teeth by the use of chloric ether, when the excitement subsided; no bad effects being developed until one week later, when increased nervous excitement ensued, amounting almost to a spasm. This effect lasted some time, and seems to have been the result of the shock in a somewhat deranged nervous system. In diseases of the heart he would almost as soon give ether as perform any extended dental operation without it, because the shock might be quite as injurious. With the mixture of ether and chloroform, and having plenty of water at hand, with a recumbent position, he feels safe in administering the agent to almost any one.

Dr. McDonneld thinks the use of anæsthetics encourages the useless and reckless extraction of teeth.

Dr. Webb. The fault lies with the operator and not with the anæsthetic.

Dr. Moore prefers ether, as it does not leave the patient so depressed as does chloric ether or chloroform; related a case in which he administered ether, which was followed by undue excitement, preventing the extraction of the teeth; permitted the effects to pass off, and administered chloric ether the second time. The patient began to sink, when water, artificial respiration, mustard-plasters, etc. were brought into use, and after some time all was well.

Dr. Webb thought the over-stimulation of the cerebrum, twice in succession, was the cause of the trouble in the case related by Dr. Moore; for although ether acts first as a stimulant, it also acts with equal power as a sedative. In carrying the anæsthesia thus far, the operator should hurry past this point and involve the cerebellum and pons varolii. As a general thing, he would rather trust a dentist to administer an anæsthetic than a physician; and does not think it augurs well for the advancement of the profession where a dentist calls in a physician to administer these agents for him.

Dr. J. S. Smith read an essay on "The Importance of a Correct Diagnosis."

As the time for adjournment was rapidly drawing nigh, the discussion on this essay could not be carried to any extent.

Dr. Guilford announced the death of Dr. W. K. Brenizer, of Reading,

Pa. The deceased was a member of the Lebanon Valley Dental Association, and one of the founders of the State Society.

Dr. Moore paid an earnest tribute to the memory of the deceased.

Dr. Scholl said that as action had already been taken by other societies, it was considered sufficient to have paid this tribute to his memory.

Dr. Robbins called the attention of the society to a double-headed steel mallet devised by himself.

Drs. Pierce and McDonneld were enthusiastic in their praises of this mallet.

On motion of Dr. Amer, it was agreed that when the committee to revise the constitution and by-laws have completed their labors, they have copies printed on slips and sent to the members.

On motion of Dr. Robbins, Dr. Welchens was appointed to deliver a public address at the next meeting.

The Executive Committee chose the following essays for the next meeting:

"Discolored Teeth and their Treatment," by R. Huey, D.D.S., Philadelphia; "Absorption of Alveolar Processes," by Geo. W. Neidich, D.D.S., Carlisle; "Operative Dentistry," by G. B. McDonneld, Conneautville; "Dental Pathology," by J. G. Moore, Lancaster; "Mechanical Dentistry," by Chas. J. Essig, D.D.S., Philadelphia; "Preservation of Children's Teeth," by W. E. Magill, Erie; "Dental Ethics," by M. E. Gillespie, Pittsburg.

On motion, adjourned to meet at Erie on the first Tuesday in June, 1872.

M. H. Webb, D.D.S., *Reporter*.

ILLINOIS STATE DENTAL SOCIETY.

This society met for its seventh annual session at Peoria, May 9, 1871. The President, Dr. G. V. Black, of Jacksonville, in the chair.

The Committee on Dental Legislation being called for, presented their report, the substance of which is as follows:

That they had drawn up and caused to be introduced into both branches of the legislature, "a bill to insure the better professional education of practitioners of dental surgery in the State of Illinois;" which, in accordance with the instructions of the committee, had reference only to those who might in the future enter upon the practice of the profession in this State; requiring of all such a diploma from a dental college, or, in case of parties moving into the State, an examination before a board of examiners appointed by the society. They also drew up a memorial to the legislature, setting forth the evils existing and the proposed plan of action, and had sent copies of both documents to all parties in the State whom it was considered probable would favor

the measure, requesting them to use their personal influence with their senators and representatives to secure its passage. Owing, however, to the adjournment of the legislature without accomplishing anything in the way of legislation, the bill, though it had been read twice in the House and ordered printed, failed to receive any further action. The committee thought the prospect favorable for its ultimate passage, but recommended continued and augmented effort, and in addition to the plans already adopted, the circulation of a petition praying for its passage, to which it was desired each member of the society should secure as many signatures as possible prior to the next opportunity for bringing up the matter, which it was hoped would materially strengthen the cause. The society had been incorporated by the action of the committee, under the general law of the State.

The report was received and adopted, and the committee continued during the year with discretionary powers.

The report of the Committee on Publication was then read, which showed that seven hundred and fifty copies of the Transactions had been issued and circulated, at a cost of over two hundred dollars, being over three-fifths of the amount expended by the American Dental Association in 1869 for the same purpose. The volume of Transactions had been highly commended as a step in the right direction, and had given the society a standing throughout the country.

Drs. W. O. Kulp, of Muscatine, Iowa; W. N. Morrison, of St. Louis; and I. George, of Kenosha, Wisconsin, were elected honorary members.

At the afternoon session the list of subjects for discussion was taken up, and the first one opened by a paper by Dr. C. R. E. Koch, of Chicago, on "Dental Caries."

The paper alluded to the early theories on this subject, which supposed the decay to originate within the tooth, being identical with caries in bone. This idea was not received, though it was admitted that the decomposition of the teeth might be influenced by vital causes, but only so far as the remote causes were concerned, the immediate causes being always chemical. Facts were adduced disproving the vital theory. The causes were described to be either predisposing or exciting. Of the former, hereditary tendencies and imperfect nutrition supplied to the mother are the chief. The exciting causes are always chemical, either acid or alkali. These are either held in solution in the oral fluids, or set free by decomposition. The treatment of this condition should include prophylaxis,—supply of the proper nutrition while the teeth are formative,—which is contained in vegetable productions, fruits, and unbolted flour, but *not* in fine flour. Chemical food might be resorted to under certain conditions. The teeth should be kept clean by brushes and picks. Avoidance of extremes of temperature is recom-

mended, and the use of acid medicines should be counteracted. Finally, removal of the caries either by filing, or excavating and filling, is the topical treatment to be relied on.

The subject being open for discussion, Dr. Crouse said he thought the cause of dental caries was our improper manner of living. We shorten our lives thereby, besides losing our teeth. These influences are at work from the moment of conception. Europeans are more subject to them as they come more into our habits. He does not attach much importance to the Grahamite theories; mentioned cases where nothing but this flour is used in the family; the teeth of the children are not decayed, but are full of fissures and imperfectly developed. This proves that this diet does not produce perfect teeth of necessity.

Dr. Cushing wished to know how it could be ascertained that the diet had not made the teeth as good as they are. In spite of the fissures there was no decay, and he thought this case an argument for, rather than against, Graham.

Dr. Crouse said decay had taken place in the fissures. The mother had eaten nothing but Graham for twenty years.

Dr. Cushing said there were many influences at work which influence the formation of teeth. The mother's health may have been bad, and the Graham may have made them better than they otherwise would have been.

Dr. Kulp, of Iowa, thinks this a very important subject, and the result of its discussion will be a benefit to the human family. The medical profession is giving us much credit for our advanced researches in this direction. In his own experience he had prescribed a diet which, in a month or six weeks, removed the extreme sensitiveness, and the teeth of the mother were in a better condition than previous to pregnancy. He could refer to any number of physicians who recommended a Graham diet during these periods. We have no article which contains the elements of development as do the cereals. He thought Dr. Crouse's case an argument in favor of this diet.

Dr. Morrison suggested the importance of cleanliness, and thinks this can be promoted by the use of the coffer-dam rubber, with which he supplies his patients, and considers it superior to floss-silk.

Dr. Kulp thinks the phosphates in their pure state are not taken up, and doubts their efficiency in this form. They should be administered in the food. Many think if the front teeth are saved it is sufficient, but the opposite is the truth. One molar, for utility, is worth ten incisors.

Dr. Freeman said the rapid decay of children's teeth and its effects should not be forgotten. Experience will teach more than theory. He thinks the society ought to publish a tract on this subject and scatter it broadcast; feels it his duty to give this information; but if he does so by means of circulars, he runs against "the code."

Dr. Crouse thought the code would not prevent any one distributing such a circular, if he did not put his card upon it.

The discussion was suspended to act upon the report of the Executive Committee, and the following gentlemen were elected members: W. R. McManigle, Lacon; W. P. Richards, Elgin; C. W. Greenleaf, Peoria; A. C. Schadle, Warren; T. L. Beers, Morrison.

Discussion resumed.

Dr. Crouse thought the principal advantage of Graham bread was its laxative quality. This, by improving the general health, benefited the teeth. Graham should be credited only with what it accomplished.

Dr. Sturgis said caries and sensitive dentine were the great enemies of the dentist. A few days would make a great difference, sometimes, as to the condition of the teeth, without eating Graham. We have not come to the present stage of civilization to go back and take it rough. Past generations had better teeth than the present, owing to their better manner of living. We cannot prevent caries or sensitive dentine by Graham bread.

Dr. Kulp based his opinions on experience. The Scotch have proverbially good teeth: they eat principally oatmeal, which is rich in phosphates. If we cannot use the oatmeal, we should approach as near it as we can. He does not approve of scientific bodies resorting to ridicule; we should grasp truth where found, and receive facts as such. Wheat contains the phosphates, which is the material for building up bony tissue. The diet *is* rough, but that is its greatest advantage. We have too much slop diet.

Dr. Dean thinks the immediate cause of decay is chemical,—not parasites or fungi. Graham is a fine article of diet, but not because it contains the phosphates. Squirrels remove hulls from nuts, yet their teeth are good. There are plenty of phosphates.

Dr. Freeman said that if the material was not appropriated, the tissue could not be built up. Turnips and potatoes contained phosphates in considerable quantities.

Subject passed.

The next one was taken up, and opened by a paper by Dr. K. B. Davis, of Petersburg, on "Keeping Cavities Dry."

Dr. Davis's paper spoke of the sources of moisture in the mouth,—the necessity for its complete exclusion from the cavity, in order to secure perfect operations; the means in use formerly to effect this object, viz., the napkin, duct compressors, and spunk, and the methods of their application. The failure of these means in many cases was admitted, and the rubber dam was stated to be the one thing needful. The importance of its use was enlarged upon, and also the fact that, strange as it may seem, a large majority of dentists, even at this day, refuse to recognize its merits or persevere in its application, but go

plodding on in the old and imperfect way. It was claimed that it is a duty to try all means offered which promise to secure the highest results. The manner of application was briefly sketched, and the paper closed with a fine tribute to Dr. Barnum, whose name it was claimed should be linked with those of Hunter, Jenner, and Wells, as a benefactor to the race.

The subject being open—

Dr. Freeman said he burned his holes with a hot instrument; uses thin rubber; has no trouble except to retain the dam in some cases.

Dr. Dean punches his holes with a hollow punch on boxwood; rarely uses clamps; always applies a ligature before putting on the rubber.

Dr. Crouse spoke of the use of os-artificiel to retain the dam.

Dr. Kulp sometimes folds a piece of rubber in a napkin, and lays it inside the mouth.

Dr. Howard retains the dam by a string of beads.

Dr. Cushing would no more think of practicing dentistry without rubber than without excavators; uses a hollow punch.

Dr. Smith uses a hollow punch, block tin, and mallet.

Dr. Dean prefers hand pressure and boxwood.

Second Day.

The next subject was taken up and opened by the reading of a paper by Dr. I. P. Wilson, of Burlington, Iowa, on "Stomatitis Materna."

The essayist, after enumerating many causes which had been named as producing this disease, and mentioning objections to each of them, concludes that it is produced by a low condition of the system—positive starvation. The elements required to furnish nutrient material are not supplied. Milk and eggs are the only articles containing all these elements. The child removes these elements from the mother's system, growing itself, but weakening her, and the result is a poverty of the blood-stream, and inflammation of the mucous membrane of the mouth and other parts. Admitting that an abnormal condition of the uterus is always present in these cases, he yet does not think it a cause of the affection, but rather that both are produced by the same cause. In grinding and bolting our wheat, we remove from it the life-supporting elements. Paring potatoes also removes a large proportion of phosphates, which are situated near the surface. The disease is not confined to one sex, or to nursing females, though the latter suffer in greater degree. Sunlight and air are positively necessary. Mothers should use unbolted flour, and the "house we live in" should be kept in repair.

The subject being open—

Dr. Judd thought the paper gave too much importance to the subject of phosphates. There is need of phosphates, but there is also need of

other materials. There are usually an abundance of the phosphates taken into the system, more than are assimilated. A dentist will ascribe neuralgia to a decayed tooth; a professor of uterine diseases to a disordered uterus. We should look at all the circumstances of the case before deciding upon treatment.

Dr. I. P. Wilson only takes the ground he does because of the tendency to abandon the use of Graham.

The next subject was taken up, and opened by a paper from Dr. R. C. Mowbray, Denver, Col., which was read by the Secretary, on the "Essential Principles in Filling Teeth."

The paper urged the importance of proper preparation of cavities, which was to be attained by observing the following points: 1. Well-formed and sharp instruments. 2. Removal of all decay. 3. Cutting out fissures and angles. 4. Cutting away all frail walls, except sometimes in incisors. 5. Easy access to the cavity. 6. Use of file in crowded maxillæ. 7. Beveling margins. 8. Retaining-points.

Principles for filling: 1. Suitable instruments, and the points in order. 2. Invariably securely fasten the first piece of gold. 3. Invariably weld every additional piece. 4. Keep the margins higher than the centre. 5. Make the filling as dense as the structure and condition of the tooth will allow. 6. Finish the filling even with the margins.

The subject being open—

Dr. Cushing said he would criticise but one point in the paper, viz., that decay should always be entirely removed. Decay may be safely left in the bottom of cavities near the nerve, though that should not be the general practice. In cases where the pulp would be exposed, if it were removed, he would leave the disorganized matter, freeing the walls thoroughly.

Dr. Forbes inquired why this decay, if left, would not extend.

Dr. Cushing said air and moisture were necessary to decay, and if both are excluded the decay will not extend.

Dr. Freeman would soak the decay with creasote; works carefully in the vicinity of the pulp. Tooth-bone is a good brace for itself. Would not in all cases cut out fissures.

Dr. Honsinger is a little fearful that the remarks made may lead beginners to leave more decay than they ought. There is but one safe course—remove all the decay; cuts freely, and fills up with gold.

Dr. Crouse thinks it proper to leave some decay in some cases if the cavity is perfectly sealed; would leave black decay in the bottom of cavities; would cut away if there is much undercut, or if the walls are frail; would leave the margin nearly square.

Dr. Judd said this was considerable of a question, and beyond his knowledge. His confidence in oxychloride had been increasing for four years; thinks Hill's stopping a better non-conductor, but the nerve

bears the oxychloride best. The fixing of the first piece of gold is the foundation of filling teeth.

Dr. Forbes inquired why, if the cavity is regular, it may not be half filled with a cylinder. Density is not important. Gelatine cannot be deprived of its moisture. Creasote may retard, but will not arrest the decay. He cuts away disintegrated enamel, and enough to *see* every portion of the cavity.

Dr. Dean thought if the practitioner removed every portion of decay, he must destroy many of the teeth he filled. A certain portion of hard decay may be left, and it is sometimes good practice.

Dr. Forbes thought thermal changes might extend the decay, even if the cavity were sealed.

Afternoon Session.

The following persons were elected members: F. A. Burnham, Rochelle; C. D. Crafts, Tuscola; W. T. Smith, Peoria; J. M. Downing, Macomb; G B. Salter, Joliet; W. T. Magill, Rock Island; J. M. Lionberger, Dallas City; H. H. Townsend, Pontiac.

Discussion resumed.

Dr. Crouse thinks the file should be used and space secured oftener than it is; recommends something of a V-shape; is an advocate of heavy foil, but also uses soft foil. Time can be saved by using light foil. He does not believe in cylinders. If more soft foil were used, there would be less failures. He does not believe in rapid wedging; uses No. 2 foil where strength is not required; finishes with 120. More gold can be put into a cavity of heavy than of light foil.

Dr. Honsinger has used only crystal gold for fourteen years past. He uses foil in roots, however; holds the first pieces in place; files or cuts back teeth freely; uses rubber for wedging; had not been troubled by discoloration of crystal gold; found Morgan's inferior to Watts's.

Dr. Davis presented a case of a patient who had an extensive necrosis of the lower jaw, following extraction by the turnkey. A committee was appointed to examine it.

Discussion resumed.

Dr. Albaugh had used crystal gold almost exclusively for eleven or twelve years; is satisfied that he can make better fillings with it than with foil; attributes discoloration to the use of files which have been used on amalgam fillings; anneals only when the gold will not work.

The order of business was suspended to allow Dr. Caulk to present the electro-magnetic plugger of Dr. Bonwill. This instrument was described, and afterward exhibited, but not being in proper running order, its merits could not be judged of.

The committee to examine the case of necrosis, reported that it was

uncertain whether there was fracture of the process in extraction, but there was extensive necrosis, and probably more bone to be removed. There was no evidence of malpractice. There was no fracture of the body of the jaw. The ramus is probably necrosed.

Dr. Kulp thinks it not proper to extract teeth in acute inflammation.

Dr. Howard, of Galena, then read a paper on smooth point-pluggers and gutta-percha-faced mallets. He claimed that gold introduced with serrated instruments must of necessity be full of holes, which, however thoroughly they might be obliterated by finishing, would be sure to reappear after a while, spoiling the surface of the filling. He therefore concluded that the true plan is to use smooth-faced points, and thereby avoid all hills and valleys, save time in finishing, and secure a lasting surface. He found that by facing his mallet with gutta-percha (the commercial article), such as is used by surgeons for splints, about one-half the pain of the ordinary lead mallet was done away with, and he was also surprised to find that the force of the same blow was increased about one-half. The ordinary lead mallet is excavated about one-eighth of an inch, the gutta-percha, warmed and pressed in, leaving it about the fourth of an inch thick, the face being trimmed smooth.

Dr. Forbes thinks the greater force of the gutta-percha blow is owing to the yielding qualities of the face; covers his lead mallet with leather.

Dr. Eames has found trouble from pitting of fillings, and has nearly dispensed with serrations. We have been using too many points. Nine or twelve are sufficient. Points should be square and not round.

Dr. Crouse is using worn points, and prefers flat instruments; opposes extremes; wants deeper serrations, with soft rather than adhesive foil. Gutta-percha-faced mallets may be a good idea.

Dr. Sturgis likes the plan; had made smooth pluggers for a certain case, and could pack against frail walls better.

Dr. Kingsley had used the gutta-percha face, and he and his patients prefer it to anything else. In cases of sensitiveness, he warms the gutta-percha.

Dr. Howard says patients will complain of the change when the lead face is used unknown to them.

Dr. Honsinger says crystal gold will not pit like foil; uses small points for condensing, larger for introducing.

Dr. Kulp, though he never used smooth points for filling, uses burnishers for finishing, adding pellets when desirable, and thus avoids pitting; uses hard-rubber mallets loaded with lead; thinks we will come down to the gutta-percha face or something like it.

Dr. Forbes said that many years ago Dr. Dunning used smooth points, sharpening them on an oil-stone; claims, however, that there is an advantage in serrated instruments; burnishes invariably after filling, and adds more gold, if desirable, without difficulty. If you have

a competent malleter, an eight-ounce and a two-ounce mallet are the same.

Discussion closed.

A Committee on Instruments and Appliances was appointed, consisting of Drs. Sturgis, Honsinger, and Kitchen.

C. STODDARD SMITH, *Secretary.*

(To be continued.)

BROOKLYN DENTAL SOCIETY.

THE regular meeting of the society was held on the evening of November 28, 1870, at the house of Dr. J. C. Munroe.

Subject, "Dental Caries," continued.

Dr. Atkinson. We need to understand the cause of caries before we can truly recognize its presence and institute means for its arrest. Before the microscope was discovered we did not know the anatomical elements of a tooth, and had very vague notions of how a tooth was formed or maintained in a healthy state, or made subject to decay.

Dental caries confines us to the diseases of the teeth. The lost tissues of the teeth are not reproduced as other tissues of the body are, because the enamel belongs to the mineral kingdom, and is governed by the law of crystallosophy.

The enamel rods do not grow all together, but by a successive calcification, a cell at a time, from the base to the peripheral end of the rod, each successive calcification of a cell being the expression of the measure of the health of the primal bodies or cells, in accordance with the state of the systemic health at the time of their deposit, so that there may be planes of healthy and unhealthy enamel in the same rod. The enamel cell being, first, a corpuscle of animal mucous mass, charged with lime-salts, once hardened by calcification similar to crystallization, is incapable of decalcification, or recalcification, and thus is limited the possibilities of this tissue.

We know a man by ordinary vision; we see he has a head, a trunk, and limbs, apparent to the most superficial examination. These we may divide and subdivide by the aid of the scalpel and our natural sight into regions and different parts, such as muscles, blood-vessels, nerves, bones, and tendons; but we have as yet no idea of the true histology and anatomical elements in which the nutrient functions are displayed until the tissues are revealed by the microscope.

Some will say that enamel is dead, but enamel is never dead as long as it is enamel, no more than a diamond is dead as long as it is a diamond. A diamond may be broken into fragments, but each fragment is a diamond. Enamel may be riven into rods and fragments of rods, yet to the competent observation it is capable of being differentiated as

enamel. The diamond and enamel may both be burned, leaving us their chemical elements, but they would no longer be diamond or enamel.

There is a difference between a stone that is well organized and what we call rottenstone. There is no stone that is not an oxide of some simple substance. Instance feldspar: as feldspar in its living or crystalline state, is a siliceous mineral, composed of oxygen, silicon, and potash, or soda; in its dead or disintegrated state, it is no longer feldspar, but kaolin.

The enamel, in its degree, has as much a life expression as the lungs with which we breathe, or the blood-vessels ramifying in the lungs—the blood-column within the sphere of influence of the life-giving oxygen—or as the wonderfully complicated action of the lymphatic vessels which carry the minute bodies, the germs of blood corpuscles, out of which every tissue is wrought, constituting the whole body, from indifferent mucous mass, germinal matter, protoplasm or bathybius, to enamel; these being examples of the most concrete and discrete portions of the body yet discovered, capable of being discerned by the best eye, aided by the highest power of the microscope.

All these differ but in degrees of life-expression, commensurate to the concrete and discrete degrees of their individual presence.

Crystals live and die by the laws of crystallosophy or chemistry.

Crystals belong to the so-called Azoic period of planetary existence, and hold the dominion in the earth's crust uncounted æons before the first vegetable made its appearance.

Chemistry is the physiology and pathology of the mineral kingdom. Living crystals are under the dominion of the physiological aspect of chemistry; imperfect formation and disintegration of crystals is the expression of the pathological aspect of chemical affinity.

This is what the learned have ever called inorganic force, and gave rise to the doctrine that denied life and motion to the mineral kingdom, and dubbed this period with the unphilosophical and inane epithet—Azoic.

This inorganic force (which organizes the crystal) has three modes of expression, prophetic of the three kingdoms upon the planet, viz., the animal, vegetable, and mineral. First, Statical, or arrest of motion. Second, Vibratile motion, or a to-and-fro current, having two extremes of arrest; and third, Locomotive, or currents of centre, surface and substance interpenetrating each other, constituting soft-solid bodies, capable of moving from place to place by this inherent force.

The Statical motion holds dominion in the Mineral kingdom; the Vibratile, in the Vegetable, and the Locomotive in the Animal, and are correlated to Crystallosophy, Cellosophy, and Corpuscolosophy, as the differentiated expressions of organic planetary forces.

Thus each body being necessitated to a rise in fluid, must invoke all these laws for its complete production, so that which we denominate first and coarsest, is really the last and most complete expression of differentiation of planetary bodies.

The example of mineral body in complete expression in the human system is found in the enamel, which is organized first into an enamel cell, or mere bleb of protoplasm, into which lime-salts (Carbonate, Phosphate, and Fluate) are admitted in solution, out of which to construct the crystalline enamel rod. A tooth once perfectly formed cannot decay, except by mechanical abrasion and chemical solution. Chemistry is death to everything in shape of cell or organ except crystal.

JOHN C. WYMAN, *Reporter.*

AMERICAN DENTAL ASSOCIATION.

THE eleventh annual meeting of the American Dental Association will be held at White Sulphur Springs, Virginia, commencing on Tuesday, the first day of August next.

The following facts are condensed from a pamphlet by Prof. Moorman, resident of that place:

"White Sulphur Springs is situated in Greenbrier County, on the western slope of the great Apalachian chain of mountains. Latitude, 37½° north; longitude, 3½° west of Washington.

"Thermometer ranges in summer between 55° and 65°, and rarely attain a greater height than 80° at any time in the day.

"The situation of the Springs is elevated, and beautifully picturesque, surrounded by mountains on every side."

The Springs are at the present terminus of the Chesapeake and Ohio Railroad. The traveler by rail to these, *from any quarter of the country*, must pass through the town of Staunton. Persons from the *East*, *North*, or *West* make Baltimore and Washington points in their route to the Springs.

At Washington they take the Orange and Alexandria Railroad to Gordonsville; then the Chesapeake and Ohio to White Sulphur *via* Staunton.

Those from the *South* have a continuous line of railroad either by the way of Richmond, Virginia, or Knoxville, Tennessee.

Persons going by the Knoxville route will take the Virginia and Tennessee Railroad to Lynchburg; then the Orange and Alexandria to Charlottesville; then the Chesapeake and Ohio to the Springs.

Those taking the Knoxville route will find a daily line of stages at the "Montgomery White," that run to White Sulphur, a distance of sixty-five miles.

M. S. DEAN, *Secretary.*

[REDUCTION OF FARE —The fare to delegates on the railroads from Washington, D.C., to White Sulphur Springs and back again will be

half the usual rates. From New York to White Sulphur Springs and return, $21.60. The committee have secured reductions in other sections of the country. The above came to hand as we were going to press.—J. H. McQ.]

AMERICAN DENTAL CONVENTION.

THE undersigned Committee of Arrangements, would respectively inform the dental profession that they have made arrangements for holding the seventeenth annual meeting of the American Dental Convention at Saratoga, commencing on Wednesday, the ninth day of August, at 11 o'clock A.M.

Should the attendance be as large as anticipated, a *liberal deduction* will be made to members by the proprietors of two of the principal hotels there, with the assurance that no effort will be spared to render their guests as comfortable as possible.

Arrangements will be made for the display and exhibition of *dental materials and appliances*, also for *clinical operations*, during the entire session.

Dentists, manufacturers, and others desirous of exhibiting instruments, appliances, or improvements, will please notify the Committee as soon as possible. All desirous of securing accommodations at the hotels will also make their wishes known to the Committee, at No. 25 West Twenty-third Street, New York, as soon as possible.

J. G. AMBLER,
W. B. HURD,
J. S. LATIMER,
J. H. SMITH,
} *Committee.*

NEW YORK, June 20th, 1871.

NEW JERSEY STATE DENTAL SOCIETY.

THE second annual session of the New Jersey State Dental Society will be held at the Conservatory of Music, No. 9 Bank Street, Newark, N. J., on the second Tuesday of July, 1871, commencing at 10 A.M.

All respectable members of the profession are invited to attend and unite with the association. E. F. HANKS, *Secretary.*

EDITORIAL.

INJUSTICE TO HORACE WELLS, THE DISCOVERER OF ANÆSTHESIA.

AT the unveiling of the bronze statue of Professor Morse, in Central Park, New York, on the 10th of June, we were again forcibly impressed with the deliberate determination to ignore the just claims of Horace Wells as the discoverer of anæsthesia.

Mayor Hall said: "Although Morse lives, and New York enshrines

him, she commemorates him as the scientific associate of departed Fulton, whose statue must before long from yonder observatory overlook the rivers first conquered by steam. One Middle State city loves to remember how her citizen, Franklin, mildly passed the portals of the temple of electrical science; a Southern city how her citizen, Whitney, developed the cotton empire; a Western city how her citizen, McCormick, presented to agriculture its greatest boon; and adjacent cities gratefully recall how their citizens, Morton and Jackson, blessed humanity, and how Elias Howe lightened the atmosphere of social life, and which now is not in any aspect the same as it was to an older generation of the Union. Their generosity bestowed food, raiment, and locomotion, but New York cherishes more proudly and gratefully the thought that the genius of her citizen, Morse, put all those inventions into world-wide service, and is fast bringing together all the peoples who were dispersed at the tower of Babel." * * * * * *

Poor Wells, who conferred the greatest blessing that has ever been vouchsafed to suffering humanity, died poor, neglected, and broken-hearted, in the great city of New York, which does honor to the genius of Morse, and the fate that pursued him during life attends his memory after death. The credit which justly belongs to him is accorded to others, and particularly to one who entered his office as a student long *after* Dr. Wells had demonstrated to the world by various operations the inestimable value of the great discovery of anæsthesia.

For this man Morton, Congress was petitioned and came very near appropriating two hundred thousand dollars. Biographers, essayists, and paragraphists have vied with each other in giving reputation to a man whose gross ignorance, not only of science, but of the ordinary branches of education, made him a subject of ridicule with some, and of pity with others, who knew him well. A distinguished artist, Schuessele, in a historical picture, "Men of Progress—American Inventors," introduced this man's face among the eminent men who have made our age and country illustrious by their brilliant achievements. As if doubtful of his claims, however, the artist, instead of giving him a central position (the proper place for *the* discoverer of such a blessing as anæsthesia), has placed him at the extreme edge of the picture, and with the appearance of one who had stealthily forced himself into a company where he did not properly belong.

On the occasion referred to, the great and venerable poet Bryant, in an eloquent speech, said: "There are two lines in the poem of Dr. Johnson on the 'Vanity of Human Wishes' which have passed into a proverb:

> 'See nations slowly wise, and meanly just—
> To buried merit raise the tardy bust.'

It is our good fortune to escape the censure implied in these lines. We are together on an occasion of raising a statue, not to buried but to

living merit, to a great discoverer who yet sits among us a witness of honors which are but the first fruits of that ample harvest. His memory will gather in the long train of seasons yet to come. Yet we cannot congratulate ourselves on having set an example of alacrity in this manifestation of public gratitude. If our illustrious friend, to whom we now gladly pay these honors, had not lived beyond the common age of man, we should have sorrowfully laid them on his grave." * * *

Years have passed by since the remains of Wells were consigned to the earth, and a small grave-stone only marks his place of sepulchre. How long shall it be before that tribute is paid to his memory to which he is so justly entitled, from a world upon which he conferred such a priceless blessing? The profession of which he was a member should feel that their honor is involved, and at last—

"To buried merit raise the tardy bust."

J. H. McQ.

APPOINTMENT OF DR. RICHARD J. LEVIS AS SURGEON TO THE PENNSYLVANIA HOSPITAL.

To the dental students who are annually drawn to Philadelphia to attend the lectures in the colleges, the hospitals of our city are important aids in the acquirement of a practical knowledge of surgery, of which the students eagerly take advantage. More can be learned in one hour of practical surgery at the clinic than by hours of reading and attendance upon lectures. The changes taking place, therefore, of the incumbents in these institutions are not mere matters of local interest, but, on the contrary, assume a national importance. We are led to make this remark in connection with the retirement of PROFESSOR D. HAYES AGNEW, M.D., as Surgeon of the Pennsylvania Hospital, and the appointment of DR. RICHARD J. LEVIS as his successor.

As a private student of Prof. Thomas D. Mütter, about twenty-five years ago, Dr. Levis early imbibed a preference for surgery, and for years has been a leading surgeon in our city. In addition to a large private surgical practice, he has occupied the position of Surgeon to the Philadelphia Hospital, one of the largest eleemosynary institutions in the country. He is also Surgeon to the Wills Hospital for Diseases of the Eye, and Clinical Lecturer on Ophthalmic and Aural Surgery in the Jefferson Medical College. As will be seen by this, he enters upon the discharge of his new duties with an extended experience as a hospital surgeon.

Speaking from personal observation, Dr. Levis is deservedly popular with the students as a clinical teacher. As a lecturer, his remarks are clear, terse, and to the point, and as an operator he is prompt, rapid, and skillful. His clinics are made interesting and instructive by the number and variety of the cases presented and operated upon.

J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Modern Anæsthetics. Richard Rendle, Surgical Registrar, Guy's Hospital.—"As many of your readers may not have the opportunity of witnessing the effects of the two anæsthetics said to be rivals, may I ask you to publish a few words in favor of the bichloride of methylene? My observations are based on personal experience of some hundreds of cases, and are supported by several observers who have given both the agents a fair trial.

"The composition of the bichloride of methylene has not been found sufficiently uncertain by me to interfere practically with the physiological effects, and no dangerous symptoms have occurred in my practice. Doubtless Mr. Clover and Mr. Braine can show by experience that the nitrous oxide gas, properly given, is a very safe and efficient anæsthetic in certain cases, and this in spite of many strong theoretical reasons that have been advanced to prove its danger (I allude more particularly to the arguments of Dr. Richardson, published a year or two ago). Yet neither of these gentlemen will, I think, deny that some very alarming symptoms have followed its use, even by experienced administrators. But omitting these cases, the suitability of the gas in a certain class of cases does not disprove the equal or greater suitability of methylene in the majority of cases; nor ought those arguments against the use of methylene, which are either purely theoretical or only supported by a very limited experience in its administration, be allowed to outbalance the results of a more extensive experience, by which alone, as in the case of the gas, can its safety and suitability be proved. When properly administered, the bichloride of methylene is only exceptionally followed by nausea or sickness, and both of these have followed the use of the gas. As to the comparative portability of the two, your readers can judge when they find that the most compact form to which the gas and its necessarily complicated apparatus of iron bottle, bags, tubes, valves, and air-tight face-pieces has yet attained is about 16 by 7 by 6 inches, in all weighing from seven to eight pounds; while the methylene, and its necessary apparatus of a small glass bottle, a thin leather face-piece and flannel bag, occupies a space of 6 by 4 by 3 inches, and weighs a few ounces only, not to mention the greater simplicity of administration.

"As regards general surgery, although my practice is perhaps not as large as that of some of my seniors, yet, by reason of my connection with one of the largest general hospitals, it has been sufficient to warrant me in saying that any one who will give an impartial trial to the bichloride of methylene will rarely use any other anæsthetic in any operation, long or short. I now use no other, except when especially requested by the patient or operator, and I find it gives complete satisfaction to all concerned. I have given it for operations lasting one hour, where the operator was able to commence in three minutes, and recovery was rapid, and not followed by sickness; also for operations lasting less than a minute, where all was finished and the patient sitting up within

five minutes, without the slightest unpleasant sensation. I need scarcely add that this indicates its extensive utility.

"No doubt a large number of people would prefer to inhale the gas, notwithstanding the almost alarming array of apparatus, as being the least unpleasant of known anæsthetics; yet I find, on referring to my notes, that the majority do not object to the inhalation of methylene. Many relate their sensations from the commencement as entirely pleasant; some who have inhaled the gas previously have not known that a different agent had been used until they were told, and have merely remarked on the difference in the apparatus; some to whom I have administered gas and methylene, and all who have previously taken chloroform, have preferred the methylene. On the other hand, many object to the pungency and slight momentary sensation of impending suffocation caused by methylene vapor. No doubt in those dental operations where it can be safely predicted that the time required will be short, the gas will be found least unpleasant and equally suitable; but taking into consideration the complexity of the apparatus required, the greater difficulty of administration, the greater bulk even in its most compact form, in which a certain risk of explosion of the bottle under high pressure is entailed, and the usual lividity and stertor; while with methylene the simplicity of apparatus and ease of administration, the small bulk, the absence of a heavy bottle under high pressure, the absence of lividity or stertor, the ease with which the effect can be prolonged when circumstances arise to require it, the suitability to all cases—in short ones being followed by a recovery almost as rapid and perfect as after the use of gas, in long ones diminishing very much the distressing after-symptoms usually attendant on the use of chloroform; —does not the balance of advantages lie on the side of the methylene?

"I will only add, in conclusion, that I have no interest in writing this other than the desire to rescue a useful agent from banishment on insufficient trial. The appearance of an effort on the part of some to cry it down on theoretical grounds must be my excuse for expressing my opinion so strongly, and on an experience, though perhaps the largest individual one with this particular agent, yet much too small to decide without doubt its value and comparative safety."—(*Lancet.*)

Vaporous Anæsthetics, Uncertain Action of. Lewis Thompson, M.R.C.S., writes (*Medical Times and Gazette*): "It is now well known that vaporous anæsthetics produce upon human beings very uncertain effects, and that these effects sometimes lead to fatal results from unexplained causes. Permit me, then, to point out to the medical profession a source of variation, and even of danger, which has hitherto been overlooked in the employment of these anæsthetics.

"What chemists call the 'tension of vapor' is merely a name by which they express the disposition of any particular fluid to take on the form of gas; and this tension, or disposition, varies with the temperature of the liquid and the height of the barometer.

"But vaporous anæsthetics all depend for their activity upon this disposition to become gas, or, in chemical language, upon 'the tension of their vapors,' which, as I have stated, varies with the temperature and pressure of the atmosphere, so that the inhalation of any given anæsthetic might be perfectly safe with the thermometer at 60° Fahr. and the barometer at thirty-one inches, but inevitably fatal with the thermometer at 80° and the barometer at twenty-nine inches. Never-

theless, this important circumstance has not yet been taken into account in the administration of vaporous anæsthetics.

"It would be no way difficult to construct a table giving the elastic force or tension of any definite fluid or fluids, if the profession at large would once fix upon the kind or kinds of anæsthetics to be employed generally.

"Thus, sulphuric ether at 60° Fahr. and thirty inches of the barometer expands two parts of air into three, and forms, therefore, at that temperature and pressure one-third of the air inhaled into the lungs of a patient.

"Under the same circumstances, chloroform expands fourteen parts of air into fifteen, and, consequently, the vapor of chloroform constitutes one-fifteenth part of the air inhaled; and, from data of this kind, tables might be constructed giving the amount of atmospheric expansion for every degree of Fahrenheit between 32° and 100°, and in tenths of an inch for every variation of the barometer between twenty-eight and thirty-two inches; or the same thing might be arrived at by what is called the 'wet and dry thermometer bulb,' now used to indicate the hygroscopic state of the air. By pouring upon the wet or covered bulb of this instrument a little of the anæsthetic in question, and noticing the reduction of temperature, we ascertain at once the amount of danger connected with the administration of the anæsthetic, or, in other words, the quantity of air required to be mixed with it to insure safety.

"As a general rule, the more volatile the fluid the greater will be the variation in its effects from changes in the atmospheric temperature and pressure, and, consequently, the greater the caution required to produce and maintain any given condition in the patient operated upon."

Asphyxia from Hypodermic Injection of Morphia.—In an interesting paper on hypodermic medication (*Richmond and Louisville Med. Jour.*), Dr. W. Greene relates the following case of depression from injection of morphia: "Mrs. H. C., aged thirty-five, in good health otherwise, had been kept awake for seventy-two hours by intense neuralgic pain on the left side of the head, face, and neck, arising from a carious molar tooth on the left side of lower jaw. She was injected at 1 A.M., June 28th, with one-third of a grain of acetate of morphia dissolved in about four drops of water, under the skin of the left arm just over the insertion of the deltoid muscle. No blood appeared at the puncture. In about fifteen seconds tightness of the chest and difficulty in breathing were complained of, and the patient asked to be raised, saying she felt as if she were dying. Her face and lips now became pale; speech became indistinct (not inaudible); pulse irregular; some spasms of the facial muscles took place, and she fell back, to all appearances dead. Cold water was freely dashed over the face and chest, and as she was unable to swallow, her tongue was rubbed over with sal volatile, and ammonia applied to her nose, artificial respiration being kept up all the time. During the while her face was bleached, pulse not to be felt, and respiration not to be perceived. Insensibility continued for about three minutes, then, happily, one or two feeble beats of the pulse, and a shallow inspiration or two showed returning animation. She then became conscious; pulse feeble and irregular; respiration slow; fingers remained numbed, and both thumbs were firmly

drawn into the palms of the two hands. This passed off in about six minutes, leaving her feeling very ill, but free from the neuralgic pain, which did not return. There was no feeling of nausea, and no attempt at vomiting during any part of the time."

"*Death from Chloral.*—Dr. Bruce, resident surgeon in the Dundee Infirmary, died on Monday forenoon under these distressing circumstances: on Friday, the 5th, he complained to Mr. Moon, his colleague, of a swollen finger, caused, as he feared, at a *sectio cadaveris*. The swelling increased, and he took a dose of chloral hydrate to deaden the pain. This remedy he resorted to at intervals, until Monday morning, when he seems to have taken an extra quantity. Shortly thereafter he saw Mr. Moon in the parlor, and still complained of the swelling and pain. Mr. Moon desired an attendant to apply a poultice, and proceeded round the wards. On his return he found Dr. Bruce dead. Messrs. Begg and Allan, who were then in the infirmary, assisted Mr. Moon in his efforts at restoring Dr. Bruce, but in vain."—(*Lancet.*)

Asphyxia from Anæsthetics — Treatment.—Mr. C. Bader observes (*British Medical Journal* and *N. Y. Med. Jour.*): "Besides watching the patient's cheeks, lips, etc., attention should be paid to the color of the blood which flows; if this turn black suddenly, the chloroform or methylene should be removed. The patient, when struggling, should *never be resisted;* he should be allowed to do so while continuing to give the anæsthetics.

"*Signs of Danger.*—Among the 3224 chloroform cases, 45 are reported as having become blue in the face and stertorous suddenly, with the breathing and pulse irregular; 7 are stated to have become pale suddenly, with respiration and pulse stopping (to several is affixed the remark 'apparently dead'). In all these cases the chloroform was removed at once, and the patient *slowly and gently turned on his left side*, to cause the region of the heart and the left side of the face to rest upon the couch. Experience has shown that this turning the patient should be done *slowly and gently.* Whether the support given to the heart, or a change of position of the tongue, or some other change, be the cause of the cessation of the dangerous symptoms, I cannot say. During the many struggles with patients in danger, the fact of rapid recovery of patients when placed on the left side was observed accidentally. For the last six years it has been the sole means adopted in cases of danger; the administration of chloroform, the patient resting on the left side, was resumed as soon as the respiration had become strong and regular."

"*Bisulphide of Carbon as a Local Anæsthetic.*—Dr. Cowling (*American Practitioner*, April, 1870) calls attention to this rather neglected but really efficacious local anæsthetic. Our own experience is confirmatory of Dr. Cowling's, as to its value in relieving pain of a neuralgic character."—(*N. Y. Jour. Med.*)

Carbolic Acid applied to a Burn. By F. K. Bailey, M.D., Knoxville, Tenn.—"Feb. 20, 1871, 9 A.M., a colored boy, aged four, was severely burned by his clothes taking fire. When called, I took a vial containing carbolic acid and soon arrived. Both hands were burned to a blister, and the right wrist and forearm were also involved. Saturating cotton

batting with a solution of the acid, I wrapped the burnt surface completely, and fastened it by means of stockings drawn up above the elbows. Within half an hour the pain was so much relieved that the sufferer went to sleep. On the 22d, removed the dressing from the right hand; found no appearance of inflammation. For a week or two I changed the dressings once in two or three days, after which they were not touched oftener than necessary to apply clean bandages. Although the right wrist was very deeply burned, and so as to interfere with the muscles and tendons pertaining to the movement of the little finger, healing went on rapidly. There was strangury on the second day, but no other general disturbance.

"As an anæsthetic it was very decided in its effects. But very little pus formed, and the parts were free from inflammation during the whole time occupied in healing. There was no disagreeable odor, although the injury was deep, and the denuded surface considerable."—(*Med. and Surg. Reporter.*)

"*Carbolic Acid as a Poison.*—Three deaths from carbolic acid, accidentally taken in mistake for cough medicine, are reported from Manchester. They occurred in the Union Workhouse on Saturday last. It is strange that carbolic acid should have become so popular a remedy without more attention having been directed to the fact of its being a most virulent poison. Certainly, greater discrimination and care than have heretofore been shown are urgently called for in the employment of so potent an agent as carbolic acid has proved itself to be."—(*Lancet.*)

Artificial Plate, with False Teeth, swallowed and removed.—Dr. John Matthews reports (*Lancet*) the following case: "On the night of Sunday, March 26th last, I was called up at 1·30 A.M. to see Mrs. G. J. The messenger only waited to say that she was choking, and ran off. On arriving at the house, I was informed that the family had been aroused by the screams of the sufferer, who was liable to frequent epileptic fits. On reaching the bedside, she was found clutching at her throat, laboring for breath, and partially unconscious, having evidently just had a severe attack. She could not swallow, nor speak much above a whisper. It was then observed that a plate holding six artificial teeth, known to be in her mouth when she went to rest, had disappeared. As it could not be found anywhere, the inference naturally arose that she had swallowed it during her fit; but of this we were uncertain, since she very often misplaced or hid articles of dress, ornaments, etc. during the half consciousness succeeding her attacks.

"I immediately introduced a finger as far as possible down the throat, but could feel nothing, although it reached below the glottis. The patient was so much distressed by this that I only repeated it once with a finger of the other hand; but to no purpose, nor could any prominence be felt externally. In the absence, therefore, of absolute proof that she had swallowed the teeth, I thought it might be an aggravated case of hysteria or epileptic spasm of the pharynx; and, having prescribed accordingly, left her for a few hours, enjoining a more careful search for the missing teeth. On visiting her at 10 A.M. on Monday, I found matters *in statu quo*. She had not been able to swallow either food or medicine; but the dyspnœa was not so severe. I then explored with both fingers, but to no purpose, and left, expecting that if the plate were there it would slowly find its way into the stomach. At 2 P.M. no alter-

ation; teeth not found. I then proposed a consultation with Mr. Holmes Coote, and he accordingly saw her at 6·30 P.M. He also was in considerable doubt as to whether the teeth were there or not, since he could not feel them either by the finger or a pair of long forceps which he brought with him. I may add that our efforts were seriously impeded by the strenuous resistance of the sufferer, especially with Mr. Coote; and she finally declared that she would not suffer him to touch her any more, otherwise I have no doubt that he would have relieved her. We then left, having directed a dose of castor oil to be given in the morning.

"On Tuesday morning I visited her. The castor oil ordered could not be taken, and she was still in so much distress that, after a gentle remonstrance, she promised to be more submissive to further exploration. This I attempted still with the finger, feeling sure that the obstruction was within its reach, if her description of her suffering were accurate as to place. On this occasion the left finger went farther than before, reaching about an inch below the glottis (I had previously used the right finger without success); and I then had the satisfaction of feeling with my nail the edge of the plate. The patient was gasping for breath during this proceeding; I therefore removed my finger, and after a brief interval reintroduced it, sliding down at the same time, close to it, a pair of polypus forceps, by which I was able to grasp the thin edge of the plate, which was lying with its long axis transversely, its hollow closely applied to the back of the trachea, the teeth downward. Finding it immovable except by much force, and unwilling to risk laceration of the œsophagus, after another brief interval I once more inserted the left finger and forceps, grasped the plate, and then slid the forceps to its other end, so as to tilt it by the aid of the finger, when it was at once easily extracted. All the symptoms were of course immediately relieved. There was very little, in fact scarcely any, bleeding, and in two days the patient was as well as usual."

Paralysis following Dentition. Jefferson Medical College. Clinic of Prof. Gross. Reported by Ralph M. Townsend, M.D. (*Med. and Surg. Rep.*)—"George Hoover, aged two years and four months, is a child, very small, very short, and lacking power in his lower extremities. This child, according to the statement of the father, weighed eight pounds at birth, and seven and a half pounds nine months after; not much of a gain.

"The child suffered from spasms when a year old. Its teeth, dentition being in progress at present, are in bad condition. Otherwise than I have mentioned, the child seems well. Its intellect is good. How, then, can we account for its present helplessness? While we sum up the case we glean the following facts. This attack came on suddenly. The child was teething, and during the day had seemed perfectly healthy. It awoke early the following morning with coated tongue, excessive thirst, dry skin, and all the other attendants of high fever, *and was found to be unable to maintain itself upon its feet.* As the case unfavorably progressed, the muscles became soft and atrophied, and ultimately underwent partial fatty degeneration. The legs became flabby and cold, but while the lower extremities were thus affected, the rest of the body developed itself as under ordinary circumstances.

"The only way that such an occurrence can be explained is that the arachnoid, which is a serous membrane surrounding the spinal cord, by reflex irritation from dentition became suddenly congested. As a result

of this congestion, fluid was effused upon the cord, and its gravitation, pressing upon the lower portion, caused paralysis of those nerves distributed to the lower extremities. Now this fluid was more than simply serum, because serum would ultimately have become absorbed. Lymph or fibrin must have been effused, and by becoming organized, maintained its situation, and thus kept up the paralysis. In order to relieve the existing trouble, then, supposing this explanation to be correct, the treatment should be only such as would remove the deposit. We want, therefore, the application of sorbefacient remedies along the spine, such as the mild veratria ointment, either alone or in combination with mercurial ointment. Veratria is a powerful stimulant to the nervous structure, and mercury is likewise a good absorbent, by its action upon the absorbent vessels. Such ointment, in combination with the hot and cold douche, should be continuously applied, twice daily, for a number of months.

"Internally, we can give this child one-quarter of a grain of the iodide of potassium or sodium, in combination with the minute doses of the corrosive chloride of mercury, three times daily, being careful, however, when we use the remedy long, to have intermissions of three, four, or five days in the treatment, according to circumstances, so that the stomach may be rested and not rebel against the remedy.

"If the system is not well nourished, we can give three drops of the tincture of the chloride of iron, three times daily, to a child of this age. It is a powerful tonic, increasing the coloring matter and fibrin of the blood. Huxham's tincture of bark and the syrup of the iodide of iron would also be good remedies in similar cases. The limbs should be thoroughly rubbed; flagellation would also be here indicated. Notwithstanding what I have said, I am afraid the prognosis here is of the very worst kind."

Third Dentition.—Dr. L. F. Stoddard, of Hillsboro', Illinois, reports (*Eclectic Med. Jour.*) the following case of this: "Mary McKann was born in Green Co., Penn., in 1787; emigrated to Indiana at 30 years of age, from thence to Illinois at 55 years of age. At the age of 73 her eyesight returned, since which time she can read the finest print with the unassisted eye. At 60 years of age all her teeth had been removed; at 79 she commenced cutting a third set of teeth, and at the present time she only lacks two molars on the right lower jaw of having a full set of teeth. At 81 years of age the menses returned, and have continued with perfect regularity ever since."

Lead-line on the Gums.—Dr. William Frank Smith writes to the *Lancet* (*Baltimore Med. Jour.*): "When I commenced practice in Sheffield, I employed the iodide of potassium as an eliminative, and while employing it made a somewhat remarkable observation, which has been since confirmed by Dr. Hilton Fagge. A man came under my care with severe lead palsy. On examining his mouth, I was surprised to find the lead-line absent; there was no trace of it, though I looked carefully with a good lens. I pointed this out to the then house-surgeon, Mr. Cooper, and to one of my colleagues. The patient was placed under the iodide treatment—doses, ten grains three times a day. In the course of a week or two I was very much surprised to see little arches of black puncta over the roots of the teeth, and in the course of

a few more days the blue line was well marked, disappearing again before he left the hospital, about six weeks after his admission."

Chromic Acid in Affections of the Mouth.—The *N. Y. Med. Jour.* gives the following summary of an interesting paper on this subject, by Dr. Magitot, in the *Bulletin de Thérapeutique:*

"1. Chromic acid, by its powerfully destructive and modifying action, may, on account of the little pain it causes, be regarded as one of the most convenient agents in the cauterization of the mucous membrane of the mouth and gums.

"2. It ought to be preferred to all other agents hitherto used in the therapeutics of the several forms of ulceration and chronic inflammation of the mucous membranes of the mouth and gums.

"3. It must be looked upon as the caustic *par excellence* in the treatment of the alveolar periostitis.

"4. In cases where it is intended to destroy organic productions of the buccal mucous membrane, it may, combined or not with the use of the bistoury, be preferred to the actual cautery and other deep caustics, by reason of the simplicity and innocuousness of its application.

"The mode of its application is, namely: by means of a small flat stick loaded with a little of the solution, or even with one or two small crystals (beginning with a solution of equal parts of water and pure acid), the substance is applied easily to the diseased spot. The head is kept inclined for a moment on the opposite side, and the part touched is covered with a little cotton or lint.

"Chromic acid does not cause pain nor irritation of the teeth, and the yellowish color produced by it disappears rapidly."

Perchloride of Iron and Manganese Injection.—Dr. J. M. Holloway (*Richmond and Louisville Med. Jour.*) has received from E. Scheffer the following formula for preparing this solution, so valuable for injecting fistulas in bones: "Take fifteen grains of carbonate of manganese, rub in a mortar with one and a half fluidrachms of solution of sesquichloride of iron (of the strength used for making tinctura ferri-muriat.), and add a sufficient quantity of muriatic acid to dissolve the manganese; then add two fluidounces of distilled water, and filter. The strength of the mixture can be increased by the addition of fifteen or twenty grains of carbonate of manganese."

Spongio-piline.—"This is the name of a very ingenious contrivance, recently introduced abroad, which may be used either as a poultice or as the means of fomentation. It consists of wool and small particles of sponge, apparently felted together, and attached to a skin of india-rubber. It is about half an inch in thickness. It will be found of great value and convenience for either of the purposes referred to. It retains heat for a considerable time, and vinegar, laudanum, camphor, hartshorn, etc. can be, by its means, placed on the skin, accompanied by heat and moisture, much more readily, and with greater cleanliness, than by means of ordinary poultices."—(*Sci. Amer.*)

"*Let in the Sunlight.*—Mrs. Henry Ward Beecher, in an article in the *Christian Union*, on mistakes in our houses, specifies the 'exclusion of sunlight' as one. She says:

"We wish the importance of admitting the light of the sun, freely,

as well as building these early and late fires, could be properly impressed upon our housekeepers. No article of furniture should ever be brought to our homes too good or too delicate for the sun to see all day long. His presence should never be excluded, except when so bright as to be uncomfortable to the eyes. And walks should be in bright sunlight, so that the eyes are protected by veil or parasol, when inconveniently intense. A sun bath is of far more importance in preserving a healthful condition of the body than is generally understood. A sun bath costs nothing, and that is a misfortune, for people are deluded with the idea that those things only can be good or useful which cost money. But remember that pure water, fresh air, sunlight, and homes kept free from dampness, will secure you from many heavy bills of the doctors, and give you health and vigor, which no money can procure. It is a well-established fact that people who live much in the sun are usually stronger and more healthy than those whose occupations deprive them of sunlight."—(*Ibid.*)

"*Refreshing Summer Drink.*—A friend states that the most thirst-quenching drink that he found during the unusually hot summer was strong cold black tea, to which lemon-juice and sugar were added in quantities to suit the taste. We have often used cold or iced tea, and found it an exceedingly grateful summer beverage."—(*Amer. Agriculturist.*)

"*Reduction of Nitrate of Silver by Charcoal.*—When solid nitrate of silver, either in crystals or sticks, is placed upon glowing charcoal, deflagration takes place, the silver being left in the metallic state, while binoxide of nitrogen and carbonic acid are evolved. The nitrate is fused by the heat of the reaction and sinks into the pores of the charcoal, and as each particle of charcoal is replaced by metallic silver, the structure of the original wood is preserved. With proper management, pieces of silver of any desired size can be prepared showing the exact structure of the wood. A crystal of nitrate is placed on the end of a piece of charcoal, and the blowpipe flame is directed upon the coal near the crystal to start the reaction. When deflagration begins, crystal after crystal may be added. The nitrate fuses, passes down through the porous metal already reduced, until it reaches the glowing coal, where it is reduced. I have prepared in this manner lumps of silver weighing an ounce or more, which exhibit most beautifully the rings of the wood."—(C. F. Chandler, *Amer. Chem.* and *Drug. Circ.*)

"*Crude Gold obtained at Lend, near Gastein* (*Austria*). E. Priwoznik.—This paper treats on a peculiar kind of thin matt, or scoria, which very strongly adheres to, and outwardly covers, the ingots of gold obtained by amalgamation at the locality above named. Deducting such substances as are obviously accidental in this scoria, it was found to consist, in 100 parts, of the following sulphurets: silver, 61·99; iron, 29·04; lead, 5·33; copper, 3·64. The authorities of the Mint at Vienna, of which the author is the chemist, having been consulted with the view to ascertain the best and cheapest means to prevent the formation of this matt, a series of experiments was made by the author with the crude gold previous to fusion. It was found to consist, in 100 parts, of—gold, 66·56; silver, 23·69; mercury, 5·78; iron, 1·14; lead, 0·66; copper, 0·87; sulphur, 0·47; antimony, a trace; silica, a trace. The experiments on the smelting of this gold proved

that, if it were treated with a mixture of 2 parts of saltpetre and 1 part of borax in graphite crucibles, a metal was obtained free from adhering scoria, and composed, in 1000 parts, of 723 of gold and 250 of silver. The ingots were quite bright and smooth."—(*Polytechnisches Journal* and *Chem. News.*)

"*Reduction of Certdin Metals from their Solution by Metallic Sulphides, and the Relation of this to the Occurrence of such Metals in a Native State.* By William Skey, Analyst to the Geological Survey of New Zealand.—In a paper read by Mr. C. Wilkinson, before the Royal Society of Victoria, 'On the Formation of Gold Nuggets,' publicity is given to the fact, first observed by Mr. Daintree, that gold, when placed in a solution of its chloride undergoing decomposition by contact with organic matter, determines the deposit of much or all the liberated gold upon itself.

"In the same paper, the author states that he finds copper, iron, and arsenical pyrites, galena, zinc blende, stibnite, wolfram, and molybdenite also act as nuclei for gold thus reduced, but that brown iron ore and quartz do not.

"The general correctness of these statements has been verified by the results of a critical inquiry, conducted by Mr. Cosmo Newberry, Analyst to the Geological Survey of Victoria; but I notice there has not been any attempt on the part of either of these authors to explain these very singular phenomena.

"That gold itself should be nuclear to gold slowly precipitating from its solution is by no means abnormal or unrelated to other phenomena; it is, in fact, just what we should expect from a consideration of the mode of deposit of numerous other substances from their solutions. Whether such deposits are crystalline or amorphous, they generally tend to arrange themselves round a nucleus of their own substance; but, that substances so chemically dissimilar as those specified by Mr. Wilkinson, both as compared among themselves and to gold, should also be nuclear under these circumstances, appeared altogether so strange and anomalous, that I was induced to make further researches into this subject, for the purpose of ascertaining what other substances (if any) could be added to this list of nuclei rendered, and whether any of them could be nuclear for other metals during their slow precipitation, so that from an inquiry thus extended some general principle might be discovered regulating and explaining such deposits.

"I found, in the first place, on repeating the experiment adverted to, with certain modifications, that in the case of wolfram the tendency of gold to deposit thereon might properly be referred to the well-known reducing power of soluble proto-salts of iron upon salts of gold, since proto-oxide of iron forms a considerable portion of this mineral, and is actually dissolved away from it to a small extent by dilute acids at common temperatures,—at least I found it so in the case of a specimen of it I had from the Museum here. The case, therefore, so far as these results of Mr. Wilkinson's are concerned, is reduced to one in which there only remains to consider the metallic sulphides and arsenides, a set of metals both chemically and mineralogically related to each other.

"Now, in respect to these sulphides, it is distinctly stated in Mr. Newberry's paper that, in even 'weak solutions' of terchloride of gold (the salt used in his experiments), 'they decompose, but so slowly as not to interfere with the deposit taking place regularly.' Having cor-

roborated the correctness of this statement, and also proved that the arsenides are similarly affected, it occurred to me that (though hitherto quite unsuspected) this decomposition was very intimately connected with the first deposit of gold upon these sulphides: that, in reality, the commencement of metallic deposit was effected, not by the interaction of organic matter, as supposed, but by that of the several nuclei themselves with the salt of gold.

"I therefore agitated a little finely-powdered galena (sulphide of lead) with a weak solution of terchloride of gold, omitting the addition of organic matter, and taking every precaution against its presence accidentally, when I found, after a little while, the gold solution had become quite colorless, and on testing it not a trace of this metal could be found. It had evidently been absorbed, as it were, by the galena; and, in fact, a careful inspection of this mineral showed it to be feebly gilded.

"Small cubes of galena, simply immersed for a few hours in a strong solution of the gold salt without organic matter, were so thoroughly gilded over the greater part of their surfaces that in certain positions they could not be distinguished from gold by the eye.

"Chloride of gold was also found to be reduced by contact with the following sulphides (they include, as will be observed, all those mentioned by Mr. Wilkinson): sulphides of iron (proto and bisulphide); sulphides of copper (ferrosulphide and subsulphide); the sulphides of zinc, tin, molybdenum, lead, mercury, silver, antimony, bismuth, arsenic, platinum, and gold; and among the arsenides, mispickel and arsenide of silver. Cubical iron pyrites is rather slow in its action upon this solution of gold, while sulphide of antimony scarcely affects it at first, but after some hours' contact with it, reduction goes on rapidly, perhaps by aid of some galvanic action. All these effects were produced at common temperatures, with the exception of sulphide of bismuth, while other experiments with iron and copper pyrites prove similar effects are produced when all kind of light is excluded, so there is no reason to suppose that light has been concerned in any of these reactions.

"I should state that, in the case of some of the highly-colored minerals, such as cinnabar and arsenide of silver, for instance, it is necessary to operate upon their streak in order to obtain a visible deposit upon them at common temperatures within a reasonable time. With hot solutions, however, even these are well gilded in an hour or two.

"A portion of the metal of the sulphide was uniformly found in the solution afterwards, and also sulphuric acid; the mode, therefore, in which these effects were produced was evidently by the oxidization of both the constituents of the nucleus employed.

"Thus we have removed this singular anomaly of gold in the act of precipitating, selecting as nuclei substances so diverse as those cited, and while refusing others, which, in reality, differ no more from such non-metallic nuclei than do these from gold: as it certainly appears from these results that, whatever gold has been reduced by organic matter in the experiments quoted, would never deposit on these non-metallic nuclei *surface to surface*, but only upon *gold* already occupying such surfaces, reduced by the exercise of affinities far superior and swifter in their action than those involved in the decay of wood or other organic structures employed by Mr. Wilkinson in the experiments I have alluded to. Being so, therefore the question next arose—Is organic matter, unnecessary as it certainly is for the commencement of gold deposits on these nuclei, is it necessary to continue them, and to

give them that close coherent form obtained when such matters were administered?

"Experimentally, it appeared quite unnecessary for this, too, as it was found that the solution, after depositing a certain time, often gave films towards the angles of the nuclei, which were of some thickness, and which under the microscope appeared quite continuous.

"The reducing effects of metallic sulphides and arsenides upon salts of gold being thus manifested, it became of some interest to inquire whether or no any other metallic salts were capable of being reduced by these substances.

"This part of the subject I have only slightly investigated, but enough has been discovered to show that silver and platinum, and possibly most or all the metals of the platinum series, are reducible in this way from their solutions in acids.

"Thus silver is reduced from either its nitrate or acetate very readily by galena, copper pyrites, and the inferior sulphides of iron and copper. From ammoniacal solutions, however, it is not reduced by any of these sulphides, not even when heated with them, excepting by subsulphide of copper.

"As precipitated by galena, the silver selects some angular portion of it to deposit on, and sometimes strikes off from this in beautiful arborescent form and minutely crystalline filaments, exactly like those which the metal generally assumes in its native state.

"Cubic iron pyrites, also stibnite, has little or no effect upon silver salts, not even when heated with them; arsenide of silver has, however, a feeble effect.

"The metal platinum is very slowly removed from its bichloride solution by galena and gray copper ore; also by iron pyrites, but at a still slower speed. These were the only sulphides tried.

"Mercury does not appear to be reduced to the metallic state by any of the sulphides enumerated from its bichloride solution, but most of them reduce it to the subchloride. Sulphide of gold even thus affects this mercurial salt, the sulphur being oxidized and the gold set free.

"Neither the sulphate nor the acetate of copper are affected by these sulphides; but perchloride of iron is reduced to the protochloride by galena and gray copper ore.

"Before I proceed to the next part of the subject, I had better state here the results I obtained when other gold solutions were administered to these sulphides, the one hitherto employed in the experiments described being, as will be remembered, the chloride.

"When, in the place of this salt, I applied the *oxide* (of gold) in solution of either potash, bicarbonate of soda, or an alkaline silicate, the same reduction of the metal followed,—at least, this was the case for galena and the inferior sulphides of iron and copper. If the oxide is dissolved in ammonia, such results require for their production an elevation of the temperature of the solution to about 200° F.

"In the case of the sulphide of gold, however, whether dissolved in any of these salts or alkalies, it was found this compound could not be reduced by contact with any of these sulphides, either at common temperatures or at the boiling-point of the particular solution employed, nor yet when strong deoxidizing agents, such as tannic or gallic acids, were used along with such gold solutions.

"All this tends to show, I think, that in the case where Mr. Newberry obtained the reduction of gold upon iron pyrites from a solution

of its sulphide in bicarbonate of soda mixed with organic matter, the gold had, prior to the act of reduction, become in some way divested of its sulphur, and had taken up oxygen in exchange, thus passing to a salt readily reducible by deoxidizing agents.

"During the period of time which had to be allowed by Mr. Newberry for his experiment, the oxygen of the air might have oxidized the sulphur of the auriferous sulphide, as it does that of several other metallic sulphides, and so rendered him a gold compound amenable to the influence of deoxidizing substances; any way, it is inconceivable how organic matter and metallic sulphides, singly or conjointly, can desulphurize a gold sulphide. The effect of organic matter in a state of decay is rather to generate sulphides than to decompose them, thus retarding in the place of promoting the reduction of such compounds of gold. It is hard to suppose there could have been any chemical interchange effected by the mere addition of bicarbonate of soda to the gold sulphide, since gold has far more affinity for sulphur than for oxygen—it could hardly pass to an oxy-salt, therefore, in this manner; besides, if it could, then reduction should have proceeded as well with this kind of solution as with the gold oxide in solution of bicarbonate of soda, which, as before stated, I found it did not.

"Further experiments in this direction are, however, absolutely necessitated by the importance of ascertaining positively whether there is any solution of gold (likely to occur naturally) able to resist the reducing power of either metallic sulphides or organic matter in a state of decay.

"The several results arrived at in these investigations are now stated; it only remains, therefore, to point out, or rather to refer, to the very obvious relation they appear to sustain to the manner in which certain of our native metals are frequently associated.

"The great deoxidizing power of sulphides generally upon most gold, silver, and platinum salts, as manifested by the experiments just described, renders them so absorbent, as it were, of these metals, that any such solutions traversing a very thin vein even or reef of the mixed metallic sulphides would, in all probability, be completely divested of these metals.

"Solutions of silver, however, would be little, if any, affected in traversing a reef of either iron pyrites or stibnite; but if, in addition to silver, the solution contained gold, it is very probable a certain portion of the silver would precipitate along with the gold as the result of a secondary action, that is, by a simple chemical substitution. On the other hand, silver would readily be absorbed by veins of galena or inferior sulphides.

"All this certainly agrees very well with what we find on examination of these sulphides; indeed, the facts just stated seem to explain very simply the constant or the frequent association of gold and silver with certain of our metallic sulphides, and their absence or comparative scarcity in others. Whether or no this is the reason of such association, the knowledge that certain metallic sulphides and arsenides are capable of reducing these metals from their solutions should, I think, be taken into careful consideration when we attempt to explain the origin of these metals in the forms they have taken and in the rocks or veins they have selected.

"As yet, every theory of any general acceptance which has been broached to explain the occurrence of such metallic deposits in these matrices is based upon the reducing action of organic matter, when the

fact is that most of the common sulphides are much superior in this respect to such matters, being far more rapid in their effects, and capable of reducing, weight for weight, more metal—a single grain of iron pyrites being sufficient to reduce $8\frac{1}{6}$ grains of gold.

"While, therefore, allowing that organic matter has had a share in the reduction of gold and other metals, I cannot but think that by far the greater portion of our gold and silver deposits, especially those situated in the deeper-seated rocks and lodes removed from carboniferous strata, have been wholly due to the deoxidizing effects of pyritous minerals.

"Of course both theories require, as a common ground, that the metal shall first be in such a state of combination as to be soluble in water, a condition which is generally conceded to it, and which I have, therefore, taken all along as actually obtaining.

"I cannot take leave of this subject without adverting to and commenting upon some of the singular chemical reactions which these researches have opened up.

"In the first place, it has appeared that aqueous solutions of oxy-salts of gold, among which we must include the chlorides, for obvious reasons, possess oxidizing power to an extent not hitherto contemplated for them, great as this may have been acknowledged. I think it is a little superior to that of chromic acid, since it attacks cubical pyrites pretty readily in the cold, while chromic acid scarcely affects it.

"Further, these salts of gold not only oxidize the metals of these sulphides, but their sulphur too, although I find, from direct experiment, neither common (sublimed) sulphur, nor yet sulphur precipitated from solution in alkalies are the least affected by them, not even when these auriferous solutions are raised to their boiling-points.*

"This vulnerability of combined sulphur, as against the invulnerability of the same substance when free, suggests the greatness of the change which sulphur in itself undergoes when it passes to a state of combination.

"Possibly some voltaic action facilitating this change may be set up by these several substances among themselves, in which the gold already reduced would form the negative element, but this does not, of course, explain how the oxidation commenced."—(*Chemical News.*)

"*Hydrate of Chloral as a Reducing Agent.*—It is stated in some of the pharmaceutical journals that the hydrate of chloral can be employed as a reducing agent to great advantage. All of the noble metals are at once reduced by it, in the presence of caustic potash or soda; and as chloroform is evolved in the process, and this envelops the reduced powder, the precipitate can be readily washed out. When the solutions of gold, or of the metals of the platinum group, are treated with hydrate of chloral, warmed, and an excess of caustic soda added, and the whole boiled for a minute, a complete reduction of the metals takes place, probably in consequence of the formation of some formic acid by the splitting up of the chloroform. In the case of silver salts, the reduction is also complete, and chloride of silver is formed. Mercury salts are not acted upon. These properties of the hydrate of chloral suggest its possible application for metal plating on glass, and possibly in photography. Let some one try the experiment, and report the results."—(*Sci. Amer.*)

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* Chromic acid and *cold* nitric acid have the same effect upon sulphide of gold, but have none upon these forms of sulphur.

Hydrate of Chloral, Estimation of the Value of. Dr. C. Müller.—"Since the value of the hydrate of chloral is indicated by the quantity of chloroform it yields when decomposed by caustic alkalies, the author places 25 grms. of the hydrate of chloral to be tested in a glass tube divided into 1-10th c.c. The solid substance having been placed therein, a good cork is selected for closing the tube immediately after the addition of caustic potassa solution, and the tube, having been closed, is placed in a cooling mixture. After the first violent action has ceased, the reaction may be finished by shaking the tube for a few moments, after which it should be left standing for some hours quietly, in order to obtain a complete separation of the chloroform. The number of c.c. this fluid occupies in the tube, having been read off, has only to be multiplied with its specific gravity at the temperature of the fluid to yield, by a simple calculation, the percentage quantity of the chloroform thus formed."—(*Zeitschrift für Chemie* and *Chem. News.*)

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"*What is a Carat ?*—The carat is an imaginary weight, that expresses the fineness of gold, or the proportion of pure gold in a mass of metal; thus an ounce of gold is divided into 24 carats, and gold of 22 carats fine is gold of which 22 parts out of 24 are pure, the other two parts being silver, copper, or other metal; the weight of 4 grains, used by jewelers in weighing precious stones and pearls, is sometimes called diamond weight—the carat consisting of 4 nominal grains, a little lighter than 4 grains troy, or $74\frac{1}{16}$ carat grains being equal to 72 grains troy. The term or weight *carat* derives its name from a bean, the fruit of an Abyssinian tree, called *kuara*. This bean, from the time of its being gathered varies very little in its weight, and seems to have been, from a very remote period, used as a weight for gold in Africa. In India also the bean is used as a weight for gems and pearls."—(*Sci. Amer.*)

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"*Extemporaneous Black Ink.*—

Take Acid. tannic,
" gallic, āā gr. xx;
Dissolve in water, 2 oz;
Ferr. sulph. cryst.,
" subsulph. sicc. (Monsel's salt), āā gr. xv;
Dissolve in water, 2 oz.
Mix the two solutions, and add
Mucilage, $2\frac{1}{2}$ fl. drachms;
Ol. cloves, 2 drops.

"The above ink is none of the cheapest, being about one dollar per gallon; but for my own use I prefer it to every other."—(Polyhistor, *Drug. Circ.*)

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Electro-Magnetic Motor for Sewing-Machines.—The *Sci. Amer.* gives a description, with an engraving, of a machine for this purpose: "The inventors claim that although they illustrate the invention as applied to a sewing-machine, it is really capable of being employed in working various other machines. It consists in a novel arrangement of the apparatus which forms the motor, and which, according to the inventors, enables greatly increased results to be obtained from the coils with the same pulley power. The armatures drive the needle bar directly, without the intervention of levers or other mechanism; while the feed movement is also very simply arranged, and is likewise driven directly from the armatures."

Power of India-rubber to Deaden Sound.—"*Chambers's Journal* gives this illustration of the power of india-rubber to deaden sound: We once visited a factory where some forty or fifty coppersmiths were at work in a shop above our heads; but, what was remarkable, scarcely a sound of their noisy hammering could be heard. On going up-stairs we saw the explanation. Each leg of every bench rested on a cushion made of india-rubber cuttings. This completely deadened the sound."—(*Phila. Press.*)

"*Cement for Marble.*—Sift plaster of Paris through muslin, and mix it with shellac dissolved in alcohol or naphtha. As soon as mixed, apply quickly, and squeeze out as much of the composition as possible, wiping off that which squeezes out before it sets. The cement will hold better if the parts to be joined be roughened by a pointed tool before cementing. This can be done without breaking off the edges of the fractured parts. Plaster of Paris used with white of egg also makes a good cement, but it must be used with expedition."—(*Sci. Amer.*)

"*Artificial Marble for Paper Weights or other Fancy Articles.*—Soak plaster of Paris in a solution of alum; bake it in an oven, and then grind it to a powder. In using, mix it with water, and to produce the clouds and veins, stir in any *dry* color you wish; this will become very hard and is susceptible of a very high polish."—(*Ibid.*)

Liquid Glue.—F. W. S. says (*Sci. Amer.*): "Fill a vessel (I use a glass jar) with broken-up glue of best quality, then fill it with acetic acid. Keep it in hot water for a few hours, until the glue is all melted, and you will have an excellent glue always ready."

"*Varnish to protect Polished Metals from Rusting.* Dr. C. Puscher.—The author recommends the use of a solution of paraffine (1 part, by weight, in 3 parts of petroleum) as a varnish which may be usefully applied to polished metals, especially as, after having brushed this liquid over the surface of the metals, they may be gently wiped clean with a soft piece of flannel, so as to leave only a very thin film of the varnish, yet sufficient for the protection of the polish."—(*Bayerisches Industrie* and *Chem. News.*)

Test for Steel.—The *Amer. Artisan* says: "The best test for steel suitable for good tools is to draw a portion of a bar to a fine point and then harden it. Gentle blows given with a hammer will test its tenacity. When broken, the grain should be of fine lively appearance. Inferior steel when hardened will break with a light blow, and the fracture will present a dull and lifeless appearance."

"*Silver Soap for Cleaning Silver and Britannia.*—One half pound of soap, three tablespoonfuls of spirits of turpentine, and half a tumbler of water. Let it boil ten minutes; add six tablespoonfuls of spirits of hartshorn. Make suds of this and wash with it."—(*Sci. Amer.*)

"*Cement for Glass Syringes.*—Resin, two parts; gutta-percha, one part; melt together over a slow fire, apply hot, and trim with a hot knife."—(*Ibid.*)

THE

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ORIGINAL COMMUNICATIONS.

ARSENICAL APPLICATIONS.

BY J. H. M'QUILLEN, M.D., D.D.S.,
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The employment of arsenious acid, some forty years ago, for the purpose of devitalizing the exposed pulps of teeth, may be justly regarded as one of the most important steps taken by the profession in the preservation of the teeth, and too much praise cannot be bestowed upon the discoverer, Dr. Spooner; for prior to that time aching teeth were invariably extracted, as there was no known remedy by which they could be placed in a comfortable and useful condition. Since that millions upon millions of teeth, with exposed pulps, have been treated, and rendered serviceable for years.

Of late, it is true, a reaction has taken place, and those who continue to use the agent for such purposes are denounced, in unmeasured terms, as committing a great crime. They are informed that the exposed pulp, even where a certain portion has undergone decomposition, can be saved alive by capping with oxychloride of zinc, etc., and cases upon cases are cited apparently in substantiation of this. Equally experienced, skillful, and reliable operators, however, state that they have tried this plan, and not only report their own failures but also unsuccessful cases that have come under their notice from the hands of those who claim to have met with invariable success in capping pulps.

Arsenious acid, like every other useful agent, has been injudiciously used. Its employment in the treatment of sensitive dentine may be cited in illustration of this, and the devitalization of the pulp, subsequent discoloration of the teeth, alveolar abscess, etc., generally attending its application, should be sufficient evidence against such treatment.

Again, on too many occasions it is applied to teeth painful on the contact of an instrument, or exposure to variations of temperature, and therefore supposed to have exposed pulps. The incorrectness of

the diagnosis and the treatment is made evident when, on removing the application, a thick laminæ of sound dentine has to be cut through so as to uncover and extirpate the pulp.

My object in the presentation of this communication, however, is not with the view of directing attention to such points as these, but to the careless manner in which the arsenical paste is frequently introduced into the cavity of decay in cases of actual exposure of the pulp. Three or four times the quantity being used than is required, and, on being placed in the cavity, merely covered with an additional pledget of cotton; or when Hill's stopping, gutta-percha, or cotton and sandarac varnish are employed, the superabundant paste is forced out of the cavity, and coming in contact with the free margin of the gum, surrounding the neck of the tooth, develops inflammation of the periodental membranes, followed by sloughing of the soft parts, necrosis of the alveolar process, and involving in some instances a considerable portion of the body of the bone.

A case which I have had under treatment, although not of such magnitude as this, caused the patient and friends considerable apprehension. An arsenical application was made for Miss S. (by a person professing to be a dentist) to an exposed pulp in the mesial surface of the right superior second bicuspid. The patient described the introduction of the agent as exceedingly clumsy, and causing exquisite pain, and said the taste of creasote was markedly evident as long as the application remained in the mouth. When the patient came under my care, some four or five days after the arsenic had been applied, the soft parts surrounding the necks of the bicuspids, and covering the lower portion of alveolar process, had sloughed off, the exposed process being necrosed, and the two bicuspids so loose that they could have been removed with the fingers. On examining the second bicuspid, the pulp was found in the cavity, but, as might be expected, in a putrescent condition. This was removed, the cavity washed out repeatedly with tepid water, and an application of iodine and creasote made to the gums. This treatment was continued for several days, during which the necrosed portion of the alveoli was removed. The teeth having become firm in their position, and entirely free from tenderness, the pulp cavity and cavity of decay were filled with gold. The recession of the gum, from around the necks of the bicuspids, and the large space left vacant between the teeth at the necks, marred very much the appearance of an otherwise perfect set of teeth, this being quite evident every time the patient opens the mouth. With the view of promoting the reproduction of the gum, the iodine and creasote dressings were continued daily for two or three weeks.

In connection with this case, I would state that a friend presented to me, several years ago, a right superior canine tooth, with the alveolus

surrounding it, all of which had exfoliated in consequence of an improper application of the arsenical paste.

It may be remembered that Dr. J. D. White, several years ago, suggested the propriety of making an application of this agent to the gums surrounding the roots of teeth difficult to extract, with the view of loosening them. Whether this plan has ever been tried by others I am unable to say. The fact, however, that an inflammation might be set up in the soft parts, and involve the body of the bone, would be sufficient to deter me from using it in that way.

The employment of the arsenical paste, in cases of exposed pulps, followed by thorough extirpation, has been attended by such decided advantages to the community at large, that it is not necessary to present an elaborate argument in support of the practice.

To secure success with this agent, all foreign substances should be removed from the carious cavity, care being taken not to wound the pulp; the small quantity of arsenical paste that will adhere to a pledget of cotton, the size of a pin's head, then should be applied directly to the pulp, and carefully sealed in the cavity by a covering of cotton and sandarac varnish. As a rule, twenty-four hours is a sufficient period for the application to remain in the tooth, although it is not absolutely necessary that it should be removed at that time; in some instances, indeed, there is an advantage in leaving it in for two or three days, thus obviating the necessity of repeating the application. Prof. J. Foster Flagg advocates leaving it in for a week or more, and states that in some cases the applications made by him have remained in the tooth for months without causing trouble. Beyond a period of a few days, however, there is no necessity or advantage in the preparation being allowed to continue in the tooth.

The extirpation of the pulp demands more care and time than is frequently accorded to it. Before any attempt is made at removal, the orifice leading to the pulp cavity should be enlarged to the fullest extent. A *fine* barbed broach (temper drawn) then passed as far into the canal as it will go, and rotated a few times, will generally entangle and bring away the pulp entire. This, however, does not invariably occur; only a small portion sometimes coming away at the first attempt, and the remainder of the pulp, by careless manipulation, being forced into the canal the broach (particularly when too large a one is used), and subsequent attempts at removal prove unavailing, the devitalized structure is permitted to remain and become a prolific source of trouble to the patient. The proper course, under such circumstances, is to use the finest and best broaches, and to think more of the necessity of thoroughly removing the disorganized tissue than of the time it takes to accomplish the task. One is justified in charging for extra time, but there can be no excuse for negligence in the discharge of duty. In cases where it is

necessary to reapply the arsenic, the plan suggested by Prof. Flagg, of pricking the pulp with a fine probe carrying a small quantity of the paste, I have found to answer a very good purpose; enabling me to remove the pulp at once, in place of dismissing the patient until another time.

SECONDARY HEMORRHAGE CONSEQUENT UPON EXTRACTION OF TEETH.

Read before the State Dental Association, Charleston, S. C., November, 1870.

BY B. A. RODRIGUES, M.D., D.D.S., CHARLESTON, S. C.

THE accident in dental surgery to which I invite your attention is, apparently, one of such trivial character that it scarcely seems to warrant special notice, were it not of more frequent occurrence than is generally supposed, and did it not often embarrass simple and otherwise safe operations in minor surgery. I allude to hemorrhage consequent upon *the extraction* of the *teeth*. The constant repetition of so simple an operation as the removal of a tooth has, in my practice, given rise to many points of real interest, to which I may perhaps refer on some future occasion. The point, however, to which I would invite your consideration at this time, is the truly alarming amount of blood which may sometimes be lost after the ordinary operation of extraction.

The ultimate ramification of the dental artery, as it penetrates the root of the tooth, would seem too small to prove the source of persistent hemorrhage, and yet the danger, even from so small a vessel, is a fact known to every experienced practitioner as among the casualties of practice.

Such an instance has recently presented itself in a case which I will detain you a moment in relating.

A gentleman from the Mills House, in this city, required the removal of the roots of the left middle and lateral incisors, which I accomplished, without even being obliged to resort to the elevator. I plugged the alveoli with pledgets of cotton, and the patient left my office.

The next day he returned, complaining of some oozing of blood from the cavities that had contained the roots. I dipped a little cotton into a solution of alum, and passed the same deeply into each alveolus. This arrested the bleeding, and he was dismissed. The following day he called in haste to inform me that during the night he had really lost much blood, and, indeed, he was bleeding at the time of his visit. Very much surprised, as well as harassed, at the protracted and abundant escape of arterial blood, I removed the clot and the cotton tampon, cleansed the cavities with repeated injections of cold water and alum, and applied compresses, well saturated with the persulphate of iron, so well packed in the wound as apparently to insure the permanent

suppression of further hemorrhage. Before leaving the office, however, the bleeding recommenced, which so disconcerted my patient that he became nervously restless, and almost refused to allow me even to examine the parts, particularly as I expressed the desire to remove the dressing once more. Seeing from the gentleman's impatience that I would likely encounter some difficulty, chloroform was administered, and reapplying the styptic iron above mentioned, as deeply into the alveoli as one of my smallest instruments would permit, the hemorrhage was once more arrested.

On the evening of the next day the bleeding, however, again recurred, and the flow of blood was abundant.

As the case was no ordinary one, I thought of using the actual cautery, though I first determined to try the nitrate of silver. Accordingly, a sharp-pointed stick of the nitrate was forced up to the mouth of the bleeding vessel, and held there in contact for a short time with the happiest effect, for such a change was wrought in the tissues that the hemorrhage was finally arrested in one of the cavities, and, though it returned slightly in the other, was easily controlled by the application of the caustic.

This application, however, was quite painful, no chloroform having been used.

I have trespassed upon your time in entering upon details perhaps trivial; yet we know that fatal results have sometimes followed the removal of a tooth,—results which might have been expected never again to occur after the discovery of the *perchloride of iron.* But the properties of this styptic are uncertain, and we therefore used in preference the persulphate of iron. This, however, failed; and I have no reason to believe that continuing even *this* application would have been successful. These recurring hemorrhages would have exhausted my patient, as we know they have often proved fatal, even after the application of leeches,—especially among children; it therefore became imperative for me to resort to the most heroic treatment, in order to control this hemorrhage.

I was fortunate, however, in finding the remedy in the nitrate of silver.

In this connection I am reminded of the recent case of Dr. Schunemann, recorded by Virchow. This patient, after the easy extraction of a molar tooth, continued to bleed from day to day, notwithstanding the repeated applications of a well-adapted cork plug, followed afterwards by the application of the actual cautery; until, at the expiration of the short period of one week, exhausted and bloodless, he died from anæmia.

Happily, statistics have shown that such an event is so rare that one case only occurs in 9442 extractions, as performed in the Brunswick Hospital.

With regard to the treatment which we find recommended, of plugging these wounds with foreign bodies, such as *cork* and *wax*, as recently mentioned in the *London Lancet*, I must state my conviction, that secondary hemorrhage (often depending, as we know, upon a hemorrhagic diathesis) is not to be permanently arrested by mere pressure, but can only be controlled when a decided impression is made upon the tissues themselves.

The case which I record was undoubtedly the most tedious that has occurred in my practice; and its history, which I have given, while it reminds us of the danger following even the most simple operation in surgery, may serve also to exhibit the relative value of the different styptics we have at our command, for it will be observed that we successively used alum, persulphate of iron (preferring this to perchloride, which too often contains some free acid that greatly irritates the mucous surfaces), and derived the surest result from nitrate of silver.

THE NEW THEORY IN DENTAL HISTOLOGY.

BY H. H. FITCH, LEE, MASS.

THE "New Theory in Dental Histology," published in the March number of the DENTAL COSMOS, reminds one of that quaint old writer, who says: "Good wine produces good blood; good blood produces good feelings; good feelings produce good thoughts; good thoughts produce good actions; and good actions carry a man to heaven."

Many a charming and plausible theory is based on an equally flimsy foundation.

We are informed that the ancestors of the short-tailed cats "*are believed*" to have been abbreviated cats, and that the ancestors of the short-tailed French dogs "*no doubt*" had tails.

Again, we are told: "Now, suppose we were to cut off all the dogs' and cats' tails in the country for generations, the result would be, beyond a doubt, caudatulous, or tailless dogs and cats." Now, if he meant to say that they would either be caudated or would be tailless, he was right "*beyond a doubt*." But if, as the sense seems to indicate, he mistook the term he used, all that can be said is, that he wrote "wiser than he knew."

For generations it has been the practice among farmers to cut off lambs' tails, without regard to sex, and yet who ever knew a lamb to escape the pain of docking in virtue of having been born without a tail? Did the ancestors of what is vulgarly called the "bob-tailed" wildcat cut off their own tails for ages, till the offspring ceased to have tails "from a law of necessity based on habit"?

The Jews, who have kept the faith, have been circumcised on the

eighth day from birth ever since the time of Abraham. Yet does any one suppose that the present Jew is born with a shorter foreskin than was the Father of the Faithful?

If the remarks in regard to the transmission of scars, etc. were of general application, why are not the children of certain savage tribes born with holes in their ears and noses, and the marks of tattooing on their breasts? Their ancestors have worn these marks for ages.

The truth is, that this "New Theory" is based on supposition and exception. The cases mentioned in proof of a great general principle are themselves so rare and startling as to have excited the wonder of the witnesses who observed them. To try to account for the early loss of teeth by the stupidity and cupidity of dentists, is like explaining the saltness of the ocean by the presence of codfish in its waters. Bad teeth are as frequent among the lower classes of Irish and negroes, who never employ a dentist but as a last resort, as among those who employ even a rubber dentist. In support of this assertion, I would refer to the experience both of dentists and physicians.

Another fact which seems to have been quite forgotten is, that the time since dentistry was first recognized as a distinct profession is altogether too short for a Darwinian decade. That the ignorance of members of the profession has done great damage I well know (in common with human weakness in every department of life), but I do not believe that it is from generation to generation.

CASTING-SAND.

BY DR. T. A. D. FORSTER, PHILADELPHIA.

In experimenting with various substances, in order to discover a more cleanly substitute than the ordinary casting-sand for making dental dies, I find that fine white marble-sand, obtained by sieving the débris which collects around a marble mason's bench, or by pounding and sieving soft marble, is vastly superior to the best casting-sand, so called, for the following reasons:

Moistened with water in the same manner as the ordinary casting-sand, it gives fully as good, if not better, results in every way.

The plaster model, varnished with shellac, or other material, to prevent absorption, as usual, draws very readily, the sand not adhering to it.

The marble-sand does not become caked or lumpy, or adhere to the metal casting, as does the material now in use; but, on the contrary, falls from the die, even while hot, in its original form of granules of sand.

It does not soil the hands in the least degree, but rather cleanses them.

Lastly, marble-sand is moistened and prepared for use in one-half the usual time, and with one-half the trouble required for the preparation of common casting-sand.

PROCEEDINGS OF DENTAL SOCIETIES.

LAKE ERIE DENTAL ASSOCIATION.

THE association met in Music Hall, Meadville, June 6th, the President, Dr. G. B. McDonneld, in the chair.

Dr. Elliott read an essay on "Dental Chemistry."

Remarks and discussions followed.

Dr. Womersley doubts that fluids of the mouth affect the teeth.

Dr. C. D. Elliott thought, although the fluids of the mouth might not directly injure the teeth, the state of the system which produces acid saliva affected the nutrition of the teeth, and thus impaired their power of resistance to external agents.

Dr. Ansart, who has lived in South America, stated that the natives of that country eat great quantities of acid fruit, and that their teeth soon become disintegrated and readily crumbled away.

Dr. Hauxhurst thinks that caries results from the combination of acids with the lime salts of the teeth; that the fluids of the mouth do act directly on the teeth. We look for decay in fissures and depressions where food collects, and at the margin of the gum where acid mucus is secreted. The teeth of dyspeptics, whose secretions are so often acid, generally decay rapidly. Temperature had but little influence on the teeth, the temperature of the mouth being uniform except when changed by the introduction of foreign substances.

Dr. Robbins said that the chemical theory of decay was the accepted one, the old theory being that decay proceeded from within outward, but now that it proceeds from without inward; thinks we have a combination of chemical and thermal agents, causing decay by the decomposition of food lodged about the teeth. So the limestone of houses in Eastern Pennsylvania crumble and disintegrate under the thermal and chemical influences of the atmosphere. Teeth resist chemical action better than do the other animal tissues which are constantly changing; but the teeth have not the same power of repair which belongs to the other tissues. In order to understand the chemistry of the teeth, we must understand general chemistry. Lime salts should be administered through the food, as in brown bread, lime-water in white bread, and directly, as hypophosphite of lime, etc.

Dr. McDonneld said that deterioration of the teeth resulted from diseased constitutions, the effect of improper living; people must be taught to live simply and correctly, or remedies and diet will be of little avail; illustrated his position by an example from Dr. Burdell's book, viz., the teeth of cows fed on their natural food were sound, while the teeth of those fed on hot swill were much diseased. True medicine is proper living, which in a few generations can regenerate the human race.

Dr. Wallace said that any of the acids formed in the mouth can decompose the teeth, especially when there is not good resisting power. These acids produce chemical changes. Nitric acid attacks the albumen of the teeth, and causes brown decay. Sulphuric acid produces black, and hydrochloric acid white or chalky, decay. These acids are generated by a disordered stomach, and other causes. When there are fillings of different metals in the same tooth, a battery is formed and a galvanic current flowing from the baser to the finer metal, producing decay. This should be guarded against. Not more than once in five hundred times should we use any other metal than gold for filling teeth.

Dr. Allen had lived in the South Sea Islands; had never known a native to have the toothache; but where he was there were few acid fruits. The health of these islanders was generally good; they had no fevers. Among the Indians of Michigan he found many bad teeth; but they lived much as the white men did.

Dr. Wallace had lived in Valparaiso, and found the teeth of the South Americans all more or less decayed. The half-breeds were much afflicted. He came to the conclusion that the direct cause was a hot drink called matte. The front teeth were most affected.

Dr. G. W. Nelson read an essay on the "Management of Children's Teeth."

He advocated the use of prophylactics, the filling of deciduous teeth with gold, Hill's stopping, etc., and educating the parents in the care of their children's teeth.

Dr. Carroll stated that at its last meeting the American Dental Association had appointed a committee to draw up short rules for the management of children's teeth, and have them inserted in school text-books; said he never should extract the deciduous teeth before the time of the eruption of the permanent teeth, if it was possible to avoid it; would treat exposed nerves, and fill as in permanent teeth. For filling these temporary teeth he likes tin, which can be put in quickly; after tin, Hill's stopping, which must be renewed occasionally. He has extracted before the time for the eruption of the permanent teeth, when there are well-defined cases of alveolar abscess; thinks there is a tendency to contraction of the jaw on the premature extraction of deciduous teeth.

Dr. G. Elliott finds great difficulty in using gold or tin in deciduous teeth; thinks in some cases amalgam, well prepared, makes as good a filling for deciduous teeth as we can get; does not advocate the general use of amalgam; uses oxychloride of zinc most.

Dr. Ansart never uses amalgam in children's teeth; prefers Hill's stopping and Guillois's cement.

Dr. Wallace. One condition of deciduous teeth is where the perma-

nent teeth appear before the deciduous teeth are properly disposed of. Permanent teeth come in a wrong position.

Dr. Robbins. Management of children's teeth includes the permanent teeth. The six-year molar is usually the first tooth coming under the dentist's care. Parents often think it a temporary tooth and neglect it. We should treat and preserve this molar as well as all other permanent teeth ; thinks that the shortening of the jaw and change of facial angle of the Anglo-Saxon race is caused by the early extraction of permanent teeth. Nature's model is the best; we cannot restore the contour of the face after the extraction of cuspids; should avoid amalgam if possible, but would use it rather than extract.

Dr. C. D. Elliott has better success with cement plombe than any other plastic filling; gave a case of nine months' standing, which is still good.

Dr. McDonneld mentioned an oxychloride of zinc filling which had lasted two years. The density of an os-artificiel filling depends on the method of manipulating it.

Dr. Ansart called for information concerning the lancing of children's gums.

Dr. Griffin, when the gums are tumefied, and inflammation high, would not hesitate a moment to lance.

Dr. Ansart would invariably lance when the membrane is tense and the inflammation is high, passing a sharp lancet directly down to the tooth on the line of the cutting edge.

Dr. Dunn said that cicatrices yielded more readily to pressure than normal tissues, so that lancing did not retard the eruption of the tooth.

Dr. G. Elliott thought that more pain proceeded from the tension than from congestion.

Dr. Wallace said that the congestion was caused by pressure. The arrested blood corpuscles, pressing on nerve tissue, cause pain. This condition was relieved by lancing.

Dr. Carroll read an essay on "Alveolar Abscess," describing its various forms and the treatment required. His rule for applying local remedies was to choose that most agreeable to the patient, whether hot or cold. To illustrate, Dr. Carroll took the case of a central incisor; would inject an escharotic; when all inflammation was subdued, and the fistula healed, would fill the root solidly; and, if the trouble is renewed, would open through the alveolus, and remove the sac mechanically.

Dr. Templeton has had more success with this method than with any other, but fills before treating. Treatment through the canal is not effective unless we can force the creasote through the fistulous opening. After breaking up the sac, he applies creasote; sometimes

uses an anæsthetic, before operating. If this treatment fails, it is because we do not reach the spot when opening through the gum.

Dr. McDonneld has been treating abscess for six years, and is confident he has cured ninety-nine in one hundred cases in the superior maxilla. In the inferior maxilla he is not so successful. He injects an escharotic, usually creasote, through the pulp canal. Almost all cases of failure are due to an impaired condition of the blood, or, as in the inferior molars, to the difficulty of reaching the sac. The escharotic changes conditions; and the absorbents then carry off the effete matter, if the person is healthy.

Dr. Hauxhurst wanted information about constitutional conditions. The same treatment will succeed in one case, and in others fail. We cannot cure abscess, but only change conditions while nature cures. In some constitutional conditions nature cannot do this.

Dr. Robbins remembers when it was considered unprofessional to treat alveolar abscess, and when he was called a fool, by professional men, for attempting it. We must use the term cure for want of a better one. In some cases apparently healthy, it is difficult to decide why we do not cure. In others, a constitutional taint, as syphilis, is easily detected. When the foramen of the canal is small, and there is no fistula, make an opening through the gum. The best instrument for this purpose is a sharp Gates's drill, which goes through the process easily and brings out the cuttings, leaving a smooth, round opening. When, after apparently cured, inflammation supervenes, we may often arrest it by counter-irritants on the gums. The action of iodide of potassium, in these cases, is illustrated in Dr. Watt's "Chemical Essays." The iodine and potassium are like coupled dogs, harmless till they reach the point of obstruction, when they are released. The iodine goes off with oxygen as iodic acid, while the caustic potash dissolves the obstructions.

Dr. Geo. Elliott considers the treatment of alveolar abscess in the same light as other surgical operations. After breaking down the sac, introduce remedies which resolve the material and prepare it to pass out; then keep the fistula open till the cavity is filled up by healthy granulations, proceeding from the bottom to the top, assisting with tonics. Several interesting cases were described by Drs. Griffin and McDonneld.

Dr. Herrick read an essay on "Mechanical Dentistry."

Dr. Templeton, to obviate air-holes in plaster models, soaks the impression half an hour in water, having thinly coated it with varnish to give color, and pours without oiling.

Dr. Pierce uses aniline in the water to color impressions, and uses silex for parting.

Dr. C. D. Elliott, when taking impressions, uses the plaster thin if

the palate is spongy, so as not to push away the soft parts; if the parts are firm, mixes the plaster thicker. When taking impressions for partial sets, if the natural teeth are ill shaped, he oils the impression-cup before mixing the plaster. After taking the impression, he removes the cup first, and splits the plaster before removing it.

Dr. McDonneld thinks that the expansion of impressions results from having too thick a body of plaster; to be remedied by using wax first, and over that a thin coating of plaster; after taking the impression, puts it in water to prevent heating, which causes expansion.

Dr. Dunn thinks expansion takes place in the vulcanizer.

Dr. Templeton, to get a good articulating bite, directs the patient to sit upright and stretch the muscles of the neck before closing the jaws.

Dr. Ansart, for partial sets, takes impressions before extracting roots, etc., and carves out the plaster—getting good results.

Dr. C. D. Elliott has put up one set of teeth on the Perkins-Hyatt base. If it will withstand the fluids of the mouth, and wears well, it will supersede rubber. Put up the case in one and a half hours.

Dr. Wallace described the method of using pyroxyline, which he prefers to rose pearl. It is composed principally of gun-cotton and ether, submitted to heavy pressure, which forces out the ether. For soldering it, filings of the material itself, reduced to a pulp by ether, are used.

Dr. Robbins. The Perkins-Hyatt base contains camphor; he is afraid of the effect of camphor on the mucous membrane. This base is inflammable, as is the case with all collodion bases.

Dr. Tenney has cast aluminium plates. The process requires great nicety of manipulation, to obviate the effects of shrinkage when cooling. After casting, jar the flask and plunge two-thirds of it into wet sand, where it must be rotated continually, the plunger being pressed hard against the mouth of the flask, the upper part of which must be kept warmer than the lower. Gets better-fitting plates of aluminium than of rubber.

Dr. Hauxhurst swages thin plates of aluminium on type-metal dies, the shrinkage of which is about right; fastens the teeth with Watt & Williams's metal, columbium; drills holes in the alveolar ridge, countersinks, and fills them with pure wax; proceeds as for a rubber case, using powdered pumice in the plaster to prevent shrinkage; heats the flask almost to the melting-point of the metal; then, having the metal as nearly as possible at the melting-point, pours the metal and jars the flask.

Dr. Tenney suggested the use of paraffine instead of wax to fill the countersinks, as it will disappear entirely when heated.

Dr. Robbins gave Prof. Barker's method of soldering aluminium

plates. Prof. Barker swages the plate, scrapes it clean, and melts on it a little solder or tin, over a spirit-lamp, and usually gets a good union, but sometimes fails. Then, heating the invested plate, he casts the metal in. In this method he does not pierce the plate; thinks that the use of the French flux naphtha, which is a hydro-carbon without oxygen, protects the plate from oxygen, and thus allows a union. He stated that Dr. Moffitt, of Harrisburg, had improved his non-sectional block-work. The sections are now moulded and biscuited before the body is packed around them.

Dr. Hauxhurst advocated the use of gold as a base for artificial teeth, it being a good conductor of heat, incorruptible, easily swaged, and can be attached to the teeth by rubber. The objection to it is its high price. No material will ever be very successful which is not a good conductor of heat.

Dr. Templeton prefers Allen's continuous gum, Moffitt's non-sectional block-work, and the Loomis patent, to gold.

Dr. Robbins thinks the safest and best way to use rubber is as an attachment to gold plate; passes a continuous rim of gold around inside the teeth; does not perforate the plate, but solders gold loops to the plate to hold the rubber. This makes the best denture, being cleanly and strong, and the thermal changes are good.

Dr. C. D. Elliott uses double-headed platinum pins instead of gold loops.

Dr. Harrison gave his method of resuscitating patients who are sinking under the use of chloroform. He passes the feather end of an uncut quill down the throat and gives it a rotary motion. The patient will revive instantly. He has always succeeded in this way.

Dr. McDonneld read a volunteer essay on "The Necessity of Dividing the Dental Profession into two Distinct Specialties, Operative and Mechanical, and the benefit to be derived therefrom."

Dr. G. Elliott thought that the division of the profession would make it the interest of the mechanical dentist to destroy the natural teeth.

Dr. McDonneld explained that he would take, by law, the forceps out of the hands of the mechanical dentist.

Dr. Tenney states that, in his town, the physicians extract more teeth than the dentists.

Other members made the same statement.

Dr. G. Elliott thinks that for every tooth extracted by dentists, physicians extract one hundred; advocates the passage of a law dividing the profession, and compelling dentists to obtain a diploma before commencing practice.

Dr. Pierce shows his patients Dr. Bond's work on "Anæsthetics and their Effects," and tells them that every time they take anæs-

thetics to have a tooth extracted they have driven a nail in their coffins.

Dr. Robbins says we are now suffering from the inroads of physicians. There are short roads to the title of M D., and incompetent men are continually slaughtering teeth.

On motion of Dr. Templeton, a rising vote was taken for and against the passage of a law regulating the practice of dentistry, resulting unanimously in favor of the passage of such a law.

Dr. J. H. Nelson read an essay on "Salivary Calculus and its Treatment."

Dr. Pierce advocated extreme care in removing every particle of tartar from beneath the gums; showed how to use the tooth-brush with a vertical motion, afterward passing waxed floss-silk beneath the gums and around the teeth.

Dr. C. D. Elliott, after removing tartar, always polishes the teeth with powdered pumice, and burnishes them.

Dr. Templeton thinks that the essayist's treatment of the gums, after cleaning the teeth,—viz., the application of a solution of chloride of zinc, forty grains to the ounce of water,—is too powerful; prefers creasote.

Dr. G. Elliott has seen Dr. Nelson apply the chloride of zinc with excellent and rapid effect.

Dr. Robbins says perfectly cleaned teeth will not decay, but imperfectly cleaned teeth are in a worse condition than those not cleaned at all; discourages the use of powders; does not use tincture of myrrh, preferring tannin, and has used chloride of zinc, but is very cautious, as the hydrochloric acid will leave the zinc and attack the tooth. For diseases of the gum, and suppurating peridental membrane, however, chloride of zinc is an excellent remedy, after the failure of creasote. He finds a difference in the action between carbolic acid and pure beechwood creasote, the latter acting more kindly on the pulp and peridental membrane.

Dr. Bagley read some notes on "Operative Dentistry," calling attention to a few points in practice,—as the use of Guillois's cement, Pack's Eureka gold, light and heavy foils, material for mallet, etc.

Discussion followed.

Dr. Hauxhurst likes Guillois's cement; should apply creasote to the cavity, dry it and then apply the cement—at first thin, afterward mixed thick, and applied quickly. Keep dry till hard; coat with very thin sandarac varnish, to fill the pores, and then polish.

Dr. C. D. Elliott protects the pulp from the caustic action of Guillois's cement with plaster of Paris and thin carbolic acid.

Dr. Carroll uses Palmer's continuous current electric battery on inflamed surfaces, and in chronic alveolar abscess; is very successful

with the battery when treating sensitive dentine. If the battery were powerful enough, he could overcome every case. He applies one pole over the tooth, and the other over the nerve ganglia; has feared inflammation of the pulp, but has not aroused it yet with the electricity.

Dr. Robbins has used electricity since 1858. This use of electricity was patented, one pole being attached to the forceps, and the other in the hand of the patient. He tried this, but did not like it; made a saddle to embrace the gum, and found it invaluable when cutting sensitive dentine; now uses a brass button attached to the pole. This is placed on the gum over the tooth. The other pole is usually placed in the patient's hand. This is very useful when extracting.

The association proceeded to elect officers for the ensuing year, with the following result:

President.—Dr. J. G. Templeton.

Vice-President.—Dr. W. T. Wallace.

Secretary.—Dr. C. B. Ansart.

Treasurer.—Dr. J. H. Nelson.

Censors.—Drs. A. B. Robbins, J. C. Gifford, and W. T. Wallace.

Executive Committee.—Drs. G. B. McDonneld, C. H. Bagley, F. Herrick, J H. Nelson, and C. D. Elliott.

Delegates to the State Dental Society.—Drs. F. Herrick, W. M. Martin, A. B. Robbins, J. G. Templeton, C. D. Elliott, J. B. Humes, C. B. Ansart, and E. M. Pierce.

Delegates to the American Dental Association.—Drs. C. H. Griffin, C. B. Ansart, W. M. Martin, E. M. Pierce, D. C. Dunn, J. H. Nelson, J. C. Gifford, and G. W. Nelson.

The Executive Committee decided on the following essayists and subjects for next year:

Public Address—"Dental Education," Dr. A. B. Robbins; "Mechanical Dentistry," S. W. Tenney; "Operative Dentistry, especially Filling of the Teeth," C. D. Elliott; "Treatment of Children's Teeth," W. M. Martin; "Treatment of Diseased Gums," C. H. Griffin; "Dental Pathology," W. T. Wallace; "Treatment of Dental Pulps," D. C. Dunn; "Why should we extract Teeth?" J. B. Humes; "Dental Caries," W. E. Magill.

Dr. Hauxhurst then read an essay on "The Effects of Fetid Breath on the General Constitution."

Discussion on "Operative Dentistry" was resumed.

Dr. Robbins. When electricity is applied directly to the tooth, it is more unpleasant than when applied to the gum. We have more direct and concentrated current when the pole is applied to the ganglia than when it is held in the hand. When applying the rubber dam, it is often convenient to use the string in a half hitch. Another way to hold rubber in place is by a wedge pressed between the teeth by a perforated forceps.

The rubber dam is the best protection to the dentist against fetid breath of patients.

Dr. Butler, of Cleveland, always applies the rubber dam before beginning to excavate ; can remove the débris with a dry syringe. To avoid danger of periostitis and abscess from the forcing of fluids through the foramen at the apex of the root, when filling, he uses the hot-air syringe, which will dry out the root canal better than anything else. For trimming down approximal fillings, he finds a sickle-shaped, knife-edged instrument very useful. Rouge-cloth gives a good finish. Chalk gives the best final polish. After filling on the grinding surface, he always cuts down the gold until the teeth can close without striking the gold, before allowing the patient to leave the office. Saliva, when exposed to the air, oxidizes so rapidly that there is great danger of making mistakes when testing. He advocates the use of steel as a material for mallets ; likes nickel-plating to prevent rusting ; uses thin shellac varnish for the same purpose.

Dr. Hauxhurst suggested the use of weak collodion to prevent rusting of instruments—the weaker the better, provided a film is formed.

Dr. Ansart says that Dr. Harvey, of Buffalo, when applying the rubber dam over lower molars, in difficult cases, attaches a small piece of leather to the string, and places it so that the leather rests against both the rubber and the tooth, and prevents the string and rubber from slipping.

Dr. Hauxhurst said the principal use of Green's pneumatic engine was for trimming down gold and cutting retaining-pits,—the pneumatic plugger was not so successful.

Dr. McDonneld, after filling approximal cavities, tries to leave no space between the teeth after the operation is finished: otherwise food will lodge between the teeth and be very troublesome.

Dr. Hauxhurst spoke of teeth worn down by occlusion, and asked for a remedy.

Dr. McDonneld always fills such teeth with gold.

Dr. Wallace had such a case where the superior incisors were worn away and the inferior incisors beveled very thin and sharp. He built up the bicuspids, and cut down the inferior incisors $\frac{1}{16}$ of an inch.

Dr. McDonneld says examination of teeth requires great care and nicety. Wedging will often show a cavity which would otherwise escape observation. Use very fine instruments.

Dr. Robbins recommends making a list of cavities when the teeth are first examined, and checking off as we fill.

Adjourned to meet on the first Tuesday in May, 1872, in Conneautville, Pa.

ILLINOIS STATE DENTAL SOCIETY.

(Continued from page 371.)

Second Day—Evening Session.

Mechanical dentistry being under consideration, Dr. Eames exhibited specimens of the Perkins-Hyatt base; was disappointed in it. The odor of camphor was permanent. The time is about the same as for rubber, and the process similar up to the packing. He could not speak as to its durability. The camphor was irritating in his own mouth. It is only adapted to full temporary sets, not being strong enough for partial sets. He spoke also of the pyroxyline base; found the shrinkage uncontrollable in many cases; does not think any of the methods of using this substance will produce satisfactory results. It will deteriorate in the mouth. He has experimented with cast aluminium, but is not satisfied that it will produce successful results; can get a perfect casting in one-half the trials; spoke of Dr. Barker's method of swedging up aluminium, tinning, and then backing and attaching the teeth with tin, but thinks the adhesion will be too slight.

Dr. Swain presented a new metal base introduced by Dr. Ingersoll, of Chicago; thinks it superior to any of the other metals; can be cast thin, and is strong.

Dr. Morrison continues to use black rubber, and pink where visible. Fusible metals are largely composed of tin, which he objects to in the mouth.

Dr. Eames spoke of the porcelain base, which he said was beautiful, though brittle. The teeth are from White's manufactory, but are set in the porcelain without burning. Spoke of the flexible rubber edge, and thinks it may be an assistance in some cases, but that it will soon deteriorate. Uses sulphate of potass. in the water with which his plaster for impressions is mixed.

Dr. Marsh has found the flexible edge durable so far, and has been informed that it would remain so for years. For difficult cases it is well worth trying.

Dr. Morrison found that red rubber produced bad results, which were remedied by using black. The porcelain base was too thick for comfort.

Dr. O. Willson found the flexible edge of advantage in flat jaws, combined with powerful muscles, and regards it as a wonderful step in advance. It can be attached to aluminium and gold.

Dr. Freeman thinks it will last only from three months to two years.

Dr. Smith thought rubber decidedly the best of the cheap bases; had tried the metals, and pyroxyline in limited degree, and had had enough of them; thought if the rubber company had not shown itself, all

these objections to rubber never would have been heard of; thinks that, considering the million or two of rubber plates now in use in this country, cases of its alleged poisonous action are exceedingly hard to find. We *can* make plates out of other materials, just as we *can* raise cotton in Illinois, but in the one case cannot compete with Alabama and Mississippi, nor in the other fill all the indications which rubber undoubtedly does fill. He makes but little artificial work; but thinks the best thing to be done is to test the Cummings patent,—the Goodyear being nearly expired. He moved a committee to ascertain what could be done to accomplish this.

Dr. Kitchen thought the idea a good one, and the only way to get out of the difficulty.

Dr. Sturgiss thought the objections to rubber more legal than anything else. It was the best of the cheap bases. He favored the plan.

Dr. Crouse thought rubber detrimental, and opposed the resolution.

Dr. Honsinger hoped there was fight enough in the profession to break down the Cummings claim; thinks it can be broken down by united action.

Dr. Willson thinks it cannot be sustained, and that they will not fight it.

Dr. Swain is in favor of the resolution, but suggests that the dentists have bound themselves to recognize the Cummings claim.

Resolution carried unanimously.

Dr. Dean, of Pekin, said he had used cast aluminium with success; had cracked but two blocks.

Dr. Richards said whalebone rubber had been a success in his hands.

Dr. Kilbourne regarded rubber as useful, but far from being the best thing out; reports two cases of deleterious effects of rubber, one of which was remedied by a silver plate, and the other by a gold one.

Subject passed, and the next in order taken up and opened by the reading of a paper on "Abnormal Secretion," by Dr. O. Willson, of Aurora.

The essayist claimed that there was present in the oral cavity a large amount of abnormal secretion; in fact, that the secretions of the mouth were generally abnormal. The abnormal condition consists in an excess of acids or of alkalies. Litmus-paper is highly valuable as a test, but cannot be relied on always, for it detects only free acids and alkalies, while there may exist an abundance in slight combination ready to commence the destructive work as soon as set free. Alkali is often injurious, though from the fact of tartar protecting the teeth it would seem that it was preservative. Tartar, however, is not wholly calcareous, but contains epithelium, fibrin, etc., and acids will not always dissolve it. It is difficult to correct the function of secretion when abnormal,—that of excretion being easily controlled. Warrant-

ing operations would add nothing to the skill or honesty of the dentist. We cannot counteract a destructive condition of the fluids of the mouth by filling a tooth, nor should we expect to make it better than other teeth in the same mouth. These destructive agencies will sometimes continue to operate in spite of the most careful and conscientious work. Dental caries is nearly universal, and recession of the gums fearfully prevalent. The cause of caries is external, and the treatment too topical.

Third Day.

Subject of "Abnormal Secretion" under discussion.

Dr. Kulp thought there was not so much of it as we think for; was at one time quite enthusiastic on the subject, but now believes the secretions usually normal while in the gland; thinks vicarious secretion is present when the saliva is vitiated. Want of bathing may produce this condition. It should be corrected by attention to hygiene, etc.

Subject passed.

The next subject was opened by Dr. Cushing, who read a paper entitled "Some Inquiries relative to the Needs of the Profession for Text-Books on Pathology." He referred to the present condition of the literature on that subject, saying that it was not unreasonable to claim that we have no such literature worthy of the name, or of the present state of knowledge. He endeavored to indicate what the character of such work should be, and how it should be written. It should be comprehensive, clear, and concise, and apt in illustration. Tyndall's works on Heat and Sound were referred to as examples of the required style. The necessity of understanding not only general principles, but their application to special cases, was insisted on; those who were able to do this stood out in bold relief from the mass; the majority could not hope to obtain success by relying upon general principles alone. He claimed that pathology was but little understood; problems daily presenting which could find no solution except by referring them to constitutional causes. The inference was drawn that dental caries was not so much a local disease as a local expression of constitutional disorder, and the time was not distant when treatment would be directed accordingly. The importance of investigation in this direction was urged, and the paper closed with an appeal to those who are able to give us more light, to do so, and to all, to cultivate this field in accordance with the demand its importance makes upon us.

Discussion.

Dr. Crouse thinks there is a great dearth of information in the text-books on this subject. The American Transactions give us no light. There is little normal secretion.

Dr. Judd. In absorption of alveolar process all methods of treatment have failed. He had endeavored to ascertain whether this disease

was due to inflammation. By passing a broach, armed with cotton, high up under the gum, he had found it charged with pus corpuscles, though there were no symptoms of inflammation. If iodine, or zinc. chlo. are used in these cases, they are generally expended on the gum, and do not reach the process. He applied nitrate of silver by means of a slip of silver plate on which the nitrate was melted, by which means the seat of disease was reached, and he had thus effected a cure; had succeeded where the teeth were considerably loose, but failed where very loose; has not reproduced tissue, and had not seen any so reproduced, but has produced a firm, healthy gum.

Dr. Willson, of Iowa, inquired whether loose teeth should be extracted.

Dr. Judd thinks they should, and that the extraction will stop the absorption. If the teeth are loose, the motion will keep up the absorption, but it may be stopped if they can be fastened mechanically.

Dr. Morrison spoke of a case of recession of gums and oozing of pus, which, though he had treated with iodine, etc., he had failed to cure except by extraction and insertion of black rubber plates, since which the health of the patient had improved.

Dr. Kilbourne thinks this disease hereditary, and that there is also generally tartar present; has seen several cases of restoration of health after extraction.

Afternoon Session.

The next subject was taken up, and opened by Dr. M. S. Dean, of Chicago, who read a paper on "Dental Ethics." The essayist referred to the fact that in all ages rules for moral government had been necessary. Ethics were the development of these rules, to keep pace with advancing civilization. Dental ethics required special attention, there being no other pursuit in which those who practiced it were to the same extent the sole judge of their own operations, and no legal standard being required. It was claimed that the public, the practitioner, and the profession would be benefited by the adoption of a well-devised code of ethics. The public would be benefited because their expense would be lessened, and their comfort increased, by ridding the profession of its useless and hurtful members. The practitioner would be benefited because he would not be brought into competition with the quack, who, by promises of cheap and painless operations, deceived the public, and lessened their confidence in dental operations, by utterly failing to produce good results,—thus exerting an influence detrimental to the reputable practitioner, who is judged for the sins of the unqualified.

The profession would be benefited, because though quackery might not be exterminated, it might yet be suppressed by public sentiment. The code is so liberal that no one possessing any sense of justice could

desire to infringe it. Its whole spirit and intent were summed up in the words, be just to yourselves, your patrons, and your profession. It was not perfect, but it contained such rules as would direct any well-disposed member, so that he would not diverge far from an honorable course.

The subject being open, Dr. Edwards said he never felt the importance of it so much as at present. The committee have been in the dark as to their duties in the matter of admitting members. Is it better to admit all, and try to help them? He had been told by members that this society had been of more benefit to them than all their practice. We want an expression of views on this subject.

Dr. Crouse said the difficulty was everywhere. The association would benefit every man who came into it—not as a business matter, but morally and professionally. The code does not make any demands detrimental to a man's interests. He will bring before the society conduct contrary to the code in future. The code may be faulty, but men know well enough what it is, and it is for want of manhood that it is violated. Any one who applies should be admitted if he possesses character.

Dr. Kitchen had come near presenting a case of violation of the code. The party claimed that he did not understand it. He himself would starve rather than violate the code. The society had done him good from the start. The class of persons who desire to use the society for business purposes should be carefully handled.

Dr. Richey said that the code was not read to him before admission. If the society would not allow him to prosecute his business, he would leave it.

Dr. Freeman. We are all glad to help up the younger members. When he began he was an ignoramus. His road had been a hard one to climb, and he hoped he was still climbing. It was not till he came in contact with good men in societies, that he knew what it was to be a dentist. All should attend the meetings to hear and be benefited. When he remembers his early history, he is disposed to be stringent in rules. Any person joining this society should have had a pupilage.

Dr. Edwards thought it proper that all should attend the meetings. He owed much to associations.

Dr. Judd has confidence in the general honesty of the profession, and thinks many who are violating the code would cease to do so if talked with. Of the fourteen thousand dentists in the United States, probably not more than two thousand or three thousand belong to societies. Some are afraid of contact with great wisdom; others know enough (in their own opinion) to teach all the profession. Newspapers are always down on professional ethics. Shoemakers, they say, advertise their shoes; why not professional men their skill? He avoids extravagant advertisers, and saves twenty-five per cent. It is impudence to claim

positive superiority in anything. There is not so much money made out of advertising as is supposed. A code of ethics is a code of morals. A code will not interfere with a man's moral perceptions. Any one should be admitted to societies who is honest, and can be benefited.

Dr. Kulp says that in Iowa they have a class of junior members, who are at the proper time admitted to full membership.

Dr. Kilbourne is in favor of this plan.

Dr. Hurtt, by request of the Executive Committee, made a few remarks. He had been imposed upon by a bogus diploma issued by the "St. Louis Dental College," an institution which he had supposed to exist in good faith. He thanked the society for privately remonstrating with him. He had paid his twenty-five dollars, received his diploma, and felt honored above his ambition. He offered the diploma to the society, declaring it the most consummate, illegitimate professional charlatanism with which our calling is cursed. He announced his willingness to concur in any action which might be taken in his case, and his intention to pursue the course directed by the motto of the association—"*Artem doctrina, sanitatem arte.*"

Dr. Hurtt's remarks were received with loud and enthusiastic applause; and Dr. Forbes, in reply, gave a brief history of the so-called "St. Louis Dental College."

Dr. Judd, from the Committee on Pathology, reported that they had examined the case presented by Dr. Smith, of Peoria. The causes of the difficulty were entirely hidden. There was an opening into the nares and extensive necrosis of the palate bones. He recommends injections of tinct. of iod. and creasote, or carbolic acid; thinks there may be a reproduction of bone.

The following officers were then elected:

President.—O. Willson, of Aurora.

Vice-President.—J. N. Crouse, of Chicago.

Secretary.—C. Stoddard Smith, of Springfield.

Treasurer.—G. P. Kingsley, of Freeport.

Librarian.—J. M. Hurtt, of Peoria.

Executive Committee.—Drs. Crouse, Cushing, and Swain, of Chicago; Kitchen, of Galva; and Davis, of Petersburg.

The President elect was appointed to deliver the next annual address.

Dr. Willson, on taking the chair, and thanking the society for the honor done him, said he had noticed the gradual and sure progress of the society, which must command the respect of the profession of our sister States.

Dr. Black, the retiring President, said he had had the honor to preside over the largest and best local dental society in the world. Few

men preside over a better-looking body than this society. (Laughter.) The society was small in its inception, but had grown with a steady and rapid growth. Every member had a right to be proud of it. It is doing a great and noble work. During its existence dental work in the State had been steadily improving. The condition of the teeth of the people was better, and we might be proud of it.

The report of the Committee on Instruments and Appliances was read. While not recommending any of the "cheap metallic bases," they believed Dr. Ingersoll's to be as unobjectionable as any. It spoke of two burring engines,—one the invention of Dr. Black, of Jacksonville, the other of Dr. Edwards, of Peoria,—both of which were deemed well adapted for preparing cavities and finishing fillings. Dr. Bonwill's electro-magnetic mallet not being in running order, no report was made on its merits. Some of the finest specimens of instruments which the committee had ever inspected were on exhibition by Mr. Bingham, from the depot of S. S. White.

Evening Session.

The committee appointed for that purpose, reported resolutions of condolence on the death of Dr. Peebles; which were passed.

The next subject was opened by the reading of a paper, by Dr. C. S. Smith, of Springfield, upon "Alveolar Abscess."

The paper noted the absence of anything valuable on this subject in the standard text-books, and the general ignorance of most of the profession upon it till of late years; but considered that a marked improvement had taken place. Alveolar abscess, being an advanced stage of periodontitis, was produced by the same causes, but for practical purposes the causes were two, viz., necrosis (either of tooth or alveolus) or putrescent pulp tissue. The symptoms of the disease were described as well known, and the treatment stated to be the removal of the cause, which, if it is a putrescent pulp, involves thorough cleansing of the tooth, and the application of two agents for the complete cure, patience and iodine,—carbolic acid being the solvent.

Discussion.

Dr. Kilbourne uses a small piece of red rubber to force the medicine up the roots.

Dr. Black thinks letting alone a good thing, after thoroughly cleansing the tooth. The discharge will cease when gas ceases to be generated. He uses ether and warm water to wash the cavity; forces carbolic acid into the root with a syringe. The result is generally favorable, but he sometimes fails; spoke of a case treated by a physician for two weeks for erysipelas, in consequence of which extensive necrosis took place, involving three teeth.

Dr. Freeman uses permanganate of potass. as a deodorizer.

Dr. Crouse spoke of a case produced by syphilitic taint, which defied treatment; found benefit from iodide of potass.; used phénol sodique, as producing better results than creasote; had sometimes been induced to fill too soon; in such a case would treat from the outside; has been annoyed by breaking off drills and broaches.

Dr. Honsinger related a case where a patient was treated for three months for the results of a fracture of a wisdom tooth. The bone was necrosed from the bicuspid to the dens sapientia. He related also another case in which, after extraction, successive pieces of bone came away, and finally the condyle was removed. The cause in this case was syphilitic, and no doubt this is often the case.

Dr. Sturgiss likes phénol sodique, but will not treat cases of the character mentioned.

Subject passed.

Dr. E. H. Kilbourne, of Aurora, then read a paper on "Diseases of the Antrum."

The paper maintained that a collection of purulent matter within the antrum was, to all intents and purposes, an abscess, being the result of inflammatory action in the lining membrane, and therefore analogous to abscess in the soft parts; it being admitted, however, that the appearance of the cells under the microscope would be diverse. The causes were stated to be a morbid condition of the teeth and alveoli in most cases,—disease of the nares being, however, sometimes one. Gross and Harris were quoted, to show the conventional method of treatment by injections of astringents after affording free exit to the secretions. This plan is considered defective and uncertain in its results, and has failed in the hands of the essayist. He had, to overcome these difficulties, conceived the idea of using the "nasal douche" for this purpose. This instrument may be improvised by attaching a rubber tube, with a suitable nozzle, to an inverted quart bottle. The use of medicated injections was abandoned, and simply cold water used, and by this simple treatment complete success had resulted in two cases, one of which had defied treatment by dentists and medical men for an extended period.

At the conclusion of the reading, the meeting adjourned to meet in Chicago, on the second Tuesday in May, 1872.

The session was a most interesting one, and the attendance very large, showing an increasing interest among the profession, and giving us reason to hope that the Illinois State Dental Society will soon, if it does not already, occupy the front rank among similar bodies in our country.

C. Stoddard Smith, *Secretary.*

CALIFORNIA STATE DENTAL ASSOCIATION.

The second annual meeting of the California State Dental Association was held at the rooms of the San Francisco Dental Association, San Francisco, June 6th, 7th, and 8th, 1871.

The President, Dr. C. C. Knowles, in the chair, who delivered the annual address, which was well received.

Drs. T. Crossett, J. A. Woodward, and E. O. Belle, of San Francisco; C. Hamilton, of Nevada; A. C. Davenport, of Stockton; F. M. Shields, of Sacramento; L. G. Yates, of Centreville, and N. Klein, of San José, were admitted to membership.

Drs. Austin, Younger, and Dennis, the committee appointed for said purpose, reported the following subjects for discussion:

1st. Filling Teeth.
2d. Hemorrhage after Extracting Teeth.
3d. Treatment of Alveolar Abscess.
4th. The Cause and Treatment of Loose Teeth.
5th. Treatment of Exposed Pulp.
6th. Mechanical Dentistry.
7th. Dental Pathology.

The subject of "Filling Teeth" was taken up and thoroughly discussed.

Dr. Austin read an essay on "The Pathology and Treatment of Alveolar Abscess," which was of much interest.

Second Day.

President in the chair.

Dr. S. W. Dennis read an essay on "The Causes of the Degeneracy of the Teeth, especially among Children," by S. P. Cutler, M.D., D.D.S., of New Orleans, La.

The association tendered Dr. Cutler a vote of thanks for his kindness in furnishing the paper, and made him an honorary member.

Dr. Cutler's essay was discussed at length.

The subject of "Hemorrhage after Extracting Teeth" was taken up and discussed.

Dr. Sichel favored mechanical pressure to suppress hemorrhage when possible.

Dr. Bush related a case where profuse hemorrhage followed the extracting of a deciduous superior molar. Failing to arrest it with the usual remedies, he finally succeeded with *ice*, applying it direct to the socket and surrounding gums.

"Treatment of Alveolar Abscess" was next discussed.

Dr. Younger claimed that not five per cent. of cases treated by him were unsuccessful. His favorite remedy was saturated solution of

iodine, to be thoroughly pumped into the sac, and continued until a cure is effected.

The following were elected officers for the ensuing year:

President.—Dr. S. W. Dennis, San Francisco.

Vice-Presidents.—Dr. H. H. Pierson, Sacramento; Dr. J. J. Menefee, San José; Dr. T. Crossett, San Francisco.

Corresponding Secretary.—Dr. H. E. Knox, San Francisco.

Recording Secretary.—Dr. H. J. Plomteaux, Woodland.

Assistant Recording Secretary.—Dr. J. N. Myers, Stockton.

Treasurer.—Dr. C. C. Knowles, San Francisco.

Librarian.—Dr. R. C. Davenport, Stockton.

Dr. Knowles retired from the chair, and the President elect and the other officers entered upon the discharge of their duties.

Drs. J. J. Birge, William Dutch, H. H. Pierson, S. W. Dennis, and W. W. Light were elected delegates to the meeting of the American Dental Association, to be held at White Sulphur Springs, Va.

Third Day.

President, Dr. S. W. Dennis, in the chair.

Dr. Dennis, in behalf of the Committee on Dental Literature and Education, made a very interesting report. Referred to Publication Committee.

Dr. Knox offered the following, which was adopted:

Resolved, That our delegates to the American Dental Association be, and are hereby, instructed to use all their influence that the session of 1872 of said association be held in San Francisco.

Resolutions, expressive of the sense of the association upon the death of Drs. F. A. Park and H. J Paine, were unanimously adopted.

The committee to whom that part of President Knowles's annual address relative to dental education, etc., was referred, reported a series of resolutions heartily approving his suggestions, and "recommended that *stringent* rules should be adopted to prevent the admission of members to our society who have not a well-established reputation for scientific attainments. Also, recommending that members do not fellowship professionally with those not possessing the above qualifications," etc. Report accepted.

Dr. Knowles offered the following:

Resolved, That it is expedient that a dental periodical be published under the supervision of this association.

Referred to Committee on Publication, with instructions to ascertain the facts relative to aid from the members, probable number of advertisements to be secured, etc.

Dr. Dennis read a letter from Dr. E. A. Bogue, soliciting aid to prepare a suitable testimonial for Dr. S. C. Barnum, inventor of the "rubber dam."

A committee was appointed, consisting of Drs. Knowles, Younger, and Dutch, to take into consideration the propriety of making some substantial recognition to Dr. Barnum for his valuable invention; and our delegates to the American Dental Association were instructed to use their influence for some general plan whereby a suitable "national testimonial can be secured for Dr. Barnum."

The President appointed the Standing Committees for the ensuing year, as follows:

Committee of Arrangements.—Drs. Birge, Davenport, Shields, Yates, and Dutch.

On Publication.—Drs. Dennis, Plomteaux (ex officio), Knowles, Younger, and Bunnell.

On Scientific Investigation.—First section. Operative Dentistry—Drs. Dutch, Menefee, and Pierson. Second section. Dental Chemistry—Drs. Light, Sichel, and Belle.

On Dental Pathology and Surgery.—Drs. Austin, Crossett, Prather, Kingsbury, and Klein.

On Mechanical Dentistry.—Drs. Woodward, Bush, Myers, Cool, and Hamilton.

On Dental Literature and Education.—Drs. Knox, Younger, Crossett, Eaton, and Knowles.

Auditing Committee.—Drs. Menefee, Light, and Myers.

San Francisco was chosen as the place for the next annual session.

On recommendation of Dr. Dennis, Profs. J. H. McQuillen, Homer Judd, and J. Taft were declared honorary members.

The President assigned subjects for theses to be read at next annual session, as follows:

"Dental Therapeutics," Dr. Knox.

"On the Causes of Degeneracy of the Teeth, especially among Children," Dr. Birge.

"On the Causes of Irregularity of the Teeth, and Best Method of Correcting the same," Dr. Knowles.

"On the Pathology and Treatment of Alveolar Abscess," Dr. Menefee.

"On Dentistry, its History, Present Status, Claims, and Relations," Dr. Plomteaux.

"On Professional Ethics," Dr. Bunnell.

"On the Causes and Treatment of Loose Teeth," Dr. Younger.

On motion, adjourned to meet in San Francisco, second Tuesday in June, 1872, at 10 A.M.

S. W. DENNIS, *President.*

MASSACHUSETTS DENTAL SOCIETY.

The eighth annual meeting of the Massachusetts Dental Society was held May 18th, 1871, in their hall, No. 36 Temple Place, Boston. The following-named gentlemen were elected officers for the ensuing year:

President.—Dr. A. A. Cook.

1*st Vice-President.*—Dr. G. F. Waters.

2*d Vice-President.*—G. T. Moffatt, M.D.

Recording Secretary.—C. Wilson, D.M.D.

Corresponding Secretary.—L. D. Shepard, D.D.S.

Treasurer.—J. T. Codman, D.M.D.

Librarian.—G. T. Moffatt, M.D.

Microscopist.—T. B. Hitchcock, M.D.

Executive Committee.—E. G. Leach, D.D.S., Dr. E. Blake, E. Page, D.M.D., T B. Hitchcock, M.D., and R. L. Robbins, D.D S.

The annual address was delivered by Dr. E. Blake. Subject—"The Development and Tendencies of the Dental Profession."

An essay on "Orthodontia" was read by Dr. I. A. Salmon; and one on "Means of Advancing Dental Education" was read by Dr. D G. Harrington.

Remarks were made by Dr. I. J. Wetherbee, on "the Eureka method of inserting artificial crowns on healthy roots."

Drs. S. S. White and W. H. Atkinson were present, and made a few interesting remarks.

Dr. E. C. Rolfe was chosen to deliver the address at the next annual meeting, and Dr. J. F. Adams as substitute.

C. Wilson, *Recording Secretary.*

NORTHERN IOWA DENTAL ASSOCIATION.

The fourth regular annual meeting of the Northern Iowa Dental Association convened in Anamosa, commencing June 13th, 1871, with Dr. J. T. Abbott, President, in the chair.

Dr. G. North, of Springville, was admitted to the association as full member, and Dr. W. H. Walker, of West Branch, and Dr. B. B. Maydville, of Manchester, were admitted as junior members.

Dr. Globe read an essay on "Heavy Foils and Materials for Filling Teeth."

Dr. Poor exhibited a machine for preparing cavities for filling, finishing fillings, etc.

Dr. J. T. Abbott read an essay on "Dental Etiquette."

Dr. Artman read an Essay on "Alveolar Abscess, its Causes and Treatment at Different Stages."

Dr. Dickinson discoursed on the subject of "Little Things."

The following officers were elected for the ensuing year: President, Dr. J. T. Abbott, of Manchester; Vice-President, Dr. W. P. Dickinson, of Dubuque; Treasurer, Dr. C. Poor, Dubuque; Corresponding Secretary, Dr. C. P. Artman, of Waterloo; Recording Secretary, Dr. A. V. Eaton, of Anamosa.

The President appointed the following committees:

Executive Committee.—Drs. M. D. Goble, C. P. Artman, and E. Ebi.

Membership Committee.—Drs. John Nicholson, C. Poor, and A. S. Hodge.

Committee on Dental Ethics.—Drs. John Nicholson, C. P. Artman, and W. P. Dickinson.

A. V. EATON, *Recording Secretary.*

CLINICAL REPORTS.

UNIVERSITY OF PENNSYLVANIA.

CLINIC OF DR. J. E. GARRETSON, LECTURER ON SURGICAL DISEASES OF THE MOUTH.

REPORTED BY DE FOREST WILLARD, M.D.

RESECTION OF INFERIOR MAXILLA.

GENTLEMEN,—I propose this morning to illustrate the subject of the removal of portions of the inferior maxillary bone by various cases which have presented themselves at our clinic for relief, and during the hour while they are being successively etherized I may be able, though disconnectedly, to give you a lesson on the various diseases requiring such operation.

Case I.—Is this woman, W. G., aged fifty years, who comes to us with the growth you perceive upon her gum, at the position of the left inferior first bicuspid. It commenced as a small ulcer, some two years since, but from neglect has been allowed to progress, until now the alveolar process is implicated. This ulcer has been treated at different times, but as my probe clearly reveals, the bone has now become markedly carious, and further attempts at cure will be futile unless we remove all traces of the disease, since, from the appearance and history, I am convinced that this is an epitheliomatous growth with cancerous associations.

The tumor is an "epulis," according to some writers; yet, you will remember that epulis is not with us a distinctive malady, for we do not use that word as a noun-substantive, but merely as an adjective. We recognize no epulis, but use the term to describe the anatomical location of a disease, not to denote its pathological character. Epulo-fibroid,

epulo-cartilaginous, epulo-carcinomatous and epulo-epitheliomatous tumors we prefer to say, since epulis itself, ἐπὶ, οὖλον, means simply "upon the gums," and anything situated upon the gums is, therefore, epulic. (*Vide* DENTAL COSMOS, November, 1870.) This growth, then, we call epulo-epithelioma, and realizing as we do that although epithelioma is at first a local disease, yet we know it may become constitutional and destroy life. Thorough removal, then, is our advice, and this should be done so completely as to leave no traces of diseased structure. The section required will probably include the alveolar process of the tooth above mentioned, together with that of the second bicuspid and canine, with possibly the second incisor; its depth will depend upon the condition of the bone, since we must be guided entirely by this. Healthy bone, as you know, is easily distinguished by its fresh, white appearance, studded with numerous red, vascular points, while the periosteum is smooth and intact. This section can be easily made (after removing the three or four teeth) by a pair of sharp forceps, cutting directly through the bone, at the two ends of the intended section, and then either using a small Hey's saw to make the horizontal cut, or a pair of cutting forceps with the blades placed at right angles to the handles. There is no need of any external incision, but the soft parts will be cut through to the bone before the forceps are used.

The after-dressing required will be almost nothing, since wounds in the mouth are apt to heal comfortably and satisfactorily without much attention, the saliva being not irritating but beneficial. If there is any bleeding, plugs of lint saturated in alum-water will speedily arrest it, and a slight astringent wash will be the utmost that will ever be required. [Operation performed. The hemorrhage was but slight, and soon ceased voluntarily.—DE F. W.]

This is one of the diseases, gentlemen, which demands the removal of the bone, but there are many other causes which compel a similar procedure.

All carcinomatous growths of the jaws, for instance, should be thus dealt with, provided it is advisable to interfere with them at all,—a fact which must be carefully weighed by the surgeon in each individual case. Malignant growths will frequently present themselves to your notice in this as in other parts of the body, and it will sometimes be a difficult question for you to decide whether life will be prolonged or comfort enhanced by an operation. Study your cases, gentlemen; obtain all the knowledge possible from books, teachers, clinics, and other sources, but learn to be independent thinkers,—learn to use the faculties with which God has endowed you,—then you will become truly useful. Because one scirrhous breast is removed, because one cancerous jaw is resected, do not conclude that all are to be similarly treated. While you are physicians, be also philosophers.

In cases of epithelioma, there can seldom be a doubt as to the course to be pursued when the disease is seen in the early stages; and here let me advise you, never allow your patients to delay such a procedure for a month, or even a week, if circumstances are favorable, as it is not within our knowledge to say the moment at which constitutional contamination is to occur. Numerous cases have come under my own observation where persons have lost their lives simply by neglect of this necessity.

In all resections of the jaw, be thorough in the removal of all the parts, even well outside the disease, yet at the same time pay attention to the after-comfort and appearance of your patient. For instance, a young lady came to my office some years since, suffering from an epulo-fibrous tumor, occupying the lower jaw, which I immediately judged to be the recurrent type. Wishing, however, to spare all needless deformity, I advised her to have simply the alveolar border resected—with the distinct understanding, however, that there might be a return of the difficulty. In the event of such return, I showed her that a second operation could be performed which would still preserve the contour of her features, by leaving the rim of bone along the base of the jaw; and should further trouble arise, a complete section could then be made. Several surgeons had advised full section at once, but I felt justified in the course advised, by the fact that life was not in imminent danger, and the major operation was at any moment available. I performed the first section, and it was not a success, the disease soon reappearing; again I was most strongly urged to make a complete resection; yet, remaining firm to my first convictions of right, performed the second, leaving a complete rim of bone along the base, and this time I was gratified to find that I had not only removed the disease (there having since been no tendency to recur), but had also saved her attractive face. Spare the features, then, when possible, but do not do so when it interferes in any way with safety.

Simple and compound cysts, osseous tumors, and exostoses may all become causes which will compel you to remove portions of this bone. These osteomata are not common, but when situated upon so prominent a portion of the body, will demand relief. Upon the teeth themselves we sometimes find true ivory exostoses [Odontoma, Virchow. De F. W]; but these are quite rare, and will but seldom demand removal of more than a small portion of the adjoining alveolar process. These ivory exostoses, consisting of compact bony tissue with Haversian canals and true lamellar systems, may, however, develop in the bone itself. Giant-celled sarcomata are also found in the lower jaw, but their removal is of doubtful propriety.

Cartilaginous tumors, when invading the jaw, usually affect the bone in its entire extent, and are rapid in their growth, tending to quick

destruction of all the surrounding parts, although Lebert mentions a case (Abhandlungen, p. 197) where Dieffenbach removed such a tumor by three operations, and the patient recovered.

I have now to show you

Case II.—Who presents herself with a small tumor upon the right alveolar process of the lower jaw, at the canine tooth, which is variable in its size, being sometimes large and dense, while again it is soft and flaccid. This I can only attribute to its being an erectile growth, analogous to the nævi, and such it truly is—an epulo-erectile tumor. I believe it to be associated with the periosteum, and my probe reveals the fact that the underlying bone is also diseased. I shall therefore resect this and the adjoining alveolar process, using the cutting forceps to accomplish it. [Operation performed. The tumor was so small that there was no difficulty in working well outside its boundaries, and the bleeding, though considerable, was not at all troublesome.—De F. W.]

Case III.—Here is a woman who was before you last winter, suffering from necrosis of the jaw, consequent upon neglected alveolar abscess. As I then told you, we had little to do but to support the system, and endeavor to assist nature in the separation of the sequestrum. This, you will remember, we proposed to do by the injection of stimulating materials, such as equal parts of tinct. iodine and tinct. capsic. comp., and afterward by an injection of acid sulph., one part to seven of water, as recommended by Pollock and others. In regard to this sulphuric acid treatment, although you have seen me frequently use it before the class, yet I am still undecided as to its utility. I do not condemn it, neither can I give it my support, since any remedy, in such a slow operation as is the separation or decomposition of a sequestrum, should be tried in a large number of cases before its true merits or demerits can be recognized. Nature does so much herself that we must be guarded in our statements as to the assistance which we render; because one case recovers or does well under a certain form of treatment, proves nothing,—it is only as the testimony of one witness needing further corroboration. To the above measures we have added in case of this patient, tonics, good food, and stimulants; but all these have been unsuccessful.

You have become familiar with all the different steps of the treatment, as she has been repeatedly before you, and you will remember that she has never presented that robust, healthy appearance which would have been favorable to an arrest of this destruction of the bone. Some two months ago, you will remember, I found a large sequestrum lying loose in the tissues, which I removed by an internal incision, and which proved to be the entire ramus, save the coronoid and condyloid processes. That this was not all the necrosed bone is proven by the pouting, teatlike

prominences which you see at the orifices of these pus-discharging sinuses; and this same fact is also made evident by the probe. The entire remaining portion of that side (the right) is dead, and is now only a foreign body, increasing drain, and enfeebling the patient.

In regard to resection of this bone for necrosis, you have heard me express my views, especially in regard to phosphor-necrosis, since the bone is often in that porous, spongy condition that the remaining portion easily absorbs deleterious materials, and pyæmia is the fatal termination of many cases. In the present case, however, the ramus is already taken away, and the only remaining portion is that from the angle to the symphysis, so that the above danger is therefore lessened.

I have been hoping to save some portion of this jaw, but now find it impossible, and propose to-day to remove all the part alluded to. This will make a resection of considerable magnitude, and will necessitate, because of peculiarities in this case, an external incision from the centre of the lower lip to the point of the chin, and thence along beneath the base of the jaw as far as the angle. I am afraid to risk the *cul-de-sac* of an internal operation. In regard to external incisions upon the face, I would advise you, gentlemen, to spare the resulting prominent marks, which must necessarily be permanent, provided you can do it without interference with the success of the operation and the safety of your patient. The use of a mouth-stretcher will render it possible to perform many resections without any division of the skin; but when the section is large, I would not oppose you in a free exposure of the parts, particularly where, in cases like this one, pus-poisoning is the danger to be apprehended. If you are careful in the approximation of the edges of your wounds, a union may be secured so rapid and perfect that the resulting scar will be insignificant. Safety and freedom should be your first guide,—appearance the second.

In removing a jaw by external section, you must bear in mind the anatomical relations, and endeavor to do as little damage as possible to the surrounding structures. If your incision is carried far back, you will probably divide the facial artery, but a ligature will easily prevent troublesome hemorrhage. The inferior coronary and labial vessels will almost certainly be injured, but will not incommode. You must remember the submental and submaxillary arteries, and also, when the section is complete, the inferior dental, since it will necessarily be divided at the point where it enters the posterior dental foramen.

Be careful also of the tongue, the sublingual artery, and gland, and the submaxillary gland. When complete resection is performed, much hemorrhage can be saved, and great benefit also derived, by removing the jaw by the process of enucleation,—*i.e.* not cutting away the attached tissues, but, raising the periosteum from the bone itself at the anterior portion, insert beneath it the handles of a scalpel and slowly

tear it away throughout the whole extent. In this way an entire jaw can be removed with little danger; and you have also saved a structure which will be of incalculable benefit in the production of repair; in fact, in some cases, we may expect that large portions of the jaw will be reproduced. This is an actual fact, and has been proven by a number of cases. Should the periosteum be diseased, however, then its retention would be detrimental, since it would be but the centre for a reproduction of the malady.

When disarticulation is performed, this method is particularly to be followed as far as practicable, since the removal of coronoid and condyloid processes is certainly attended with considerable danger, by reason of the proximity of the internal carotid and maxillary arteries. If you cut the temporal muscle from its attachment upon the coronoid process, the hemorrhage will be quite profuse, from the muscular arteries entering its substances, and the same is true of the masseter and pterygoid, as they are severed from the ramus and neck. In disarticulating, you will use but the point of the knife, carefully nicking first the external lateral ligament; then entering the joint through the capsule, and turning out the head of the bone, divide the internal lateral midway between its origin from the spine of the sphenoid and its insertion just above the commencement of the mylo-hyoid groove, upon the inside of the dental foramen. The stylo-maxillary ligament which comes down from the styloid process, to be inserted just behind the angle, will also need division. In this exarticulation of the condyle, however, I would advise you not to use the knife, since the internal maxillary artery is in immediate relationship, and is a large vessel. A narrow gouge or blunt chisel is far preferable, since the periosteum can be thus detached with dispatch and safety. This accomplished upon either side, the bone is free, and can be removed as a whole, as you see in this one which I now lay on the table before you, taken but a few days since from a young lady patient. The bleeding arteries can readily be seized and tied, and serious hemorrhage checked by the pads of lint, saturated in alum-water, immediately inserted. These can remain in position for twenty-four hours, at which time they may be removed and fresh ones substituted if desirable, but care must be taken that none remain behind. Strict cleanliness must be enforced by constant syringing with permanganate of potash or other disinfectant. The external wounds are nicely approximated with hare-lip sutures about the border of the mouth, and simple interrupted silver sutures in other portions of the face. A few adhesive strips are loosely applied, and cold-water dressings laid over the parts. The cure is usually speedy if erysipelas or other accident does not occur, and you will be greatly surprised to find to what an extent nature will repair the deformity, especially when the periosteum is saved, as I have before

remarked. In a case mentioned in my book on Oral Surgery, several years have now elapsed, and although the entire half of the lower jaw was lost, yet to-day the patient looks as though no such loss had ever occurred, his face being exactly as it was before the operation, while, as far as I can see, his mastication is about as good as ever, allowing for the loss of teeth on that side. In regard to the power of periosteum to reproduce new bone, I think there is no doubt of it, if we can trust the experiments of Ollier, Demarquay, and others; for, from their statements, not only may this be done, but bone may even be made to grow in an unaccustomed situation by a transplantation of this membrane.

In the reproduction, after resection, it would seem as though the periosteum must be the only source of the callus-like material; yet Goodsir, I believe, contends that periosteum cannot be detached from living bone without tearing away minute portions of osseous tissue with it, and that these are the points from which the regenerative process commences, rather than from the periosteum itself. Billroth also does not give to periosteum the exclusive bone-forming power. In fractures, he says that the new formation occurs in the medulla and Haversian canals of the bone, as well as in the periosteum, and consists at first of small round cells, which increase greatly in number and infiltrate the tissues above mentioned. This neoplasia, he says, may ossify directly, or may form cartilage, and subsequently undergo the process of ossification. Being formed by cell-infiltration of bone itself, it would seem, certainly in cases of fracture, to take from the periosteum the exclusive osteo-plastic rôle; and in support of this he remarks, that were this not so there could be no development of bone at points where tendons are inserted and the membrane is absent.

Even in normal growth, moreover, he says that we may just as correctly regard the layer of young cells lying on the surface of the bone and extending into the Haversian canals as belonging to the bone as to the periosteum.

The substance produced in these cases of resection, as I have said, is still, I think, almost entirely from the periosteum, and therefore we should leave as much of it as possible. In conclusion, then, gentlemen, let me say a word in relation to the tearing off of the periosteum, in advance of an advancing necrosis, by means of inserted tents of sponge or cotton, which I mentioned in the early part of my lecture. It may be objected that we may thus extend the disease beyond the point which would have been reached had it been left to nature, and possibly this may be true in some cases; but when you feel sure that a certain amount must be lost—as for instance, in phosphor-necrosis, where it is almost a rule that the bone will die back to the ramus—I think that the portion of the bone destined to die has the process materially hastened by this procedure, and this will hasten necessarily the exfoliation and shorten

the consequent drain. Resections will not often be required at your hands for necrosis, since Nature is usually able to separate the slough herself, provided good nourishment is furnished. This will be an operation, however, quite often required for epulic and other tumors, and you should be ready and competent to perform it at any time, especially the smaller sections of the alveolar processes and anterior parts of the jaw. [The operation was then commenced by making the incisions as above described and turning back the flap, so that a free exposure was obtained. The soft parts were now freely dissected, and a saw carried through the symphysis, when, cutting still more freely, a strong pair of forceps lifted it easily from its bed without further labor, since the angle and ramus were already absent from the previous operation. The facial artery was not divided, and the only vessel requiring ligature was the inferior labial. The parts were approximated most accurately, and the alum-water dressing applied. There were no unfavorable symptoms, and the parts healed most kindly, both externally and internally, so that in two weeks all seemed well, and there was no discharge in either direction.*—De F. W.]

BIBLIOGRAPHICAL.

The Eye in Health and Disease. Being a Series of Articles on the Anatomy and Physiology of the Human Eye, and its Surgical and Medical Treatment. By B. Joy Jeffries, A.M., M.D. Boston: Alex. Moore. Received from J. B. Lippincott & Co.

To the dentist, every organ within the region of distribution of the great fifth pair of nerves has a special interest. The contents of the orbit being inextricably associated with those of the jaws, the importance of these relations cannot be too often dwelt upon. The work before us gives that kind of knowledge, with which it would be well for the practitioner to become familiar. If "a blind man is a poor man, and blind a poor man is," how many a dentist may be counted as a poor man when placed in any of those numerous stages antecedent to complete blindness! A manual instructing him how best to preserve the health of these organs of inestimable price will be the fittest reading, now that his eyes are good.

* In this last case, Dr. G. remarked that he trusted the class recognized that he had practiced a treatment in using the saw which they had never heard him recommend. He did it in this case because the line of demarkation would not designate itself, and because without an immediate relief the patient would die, he was satisfied, from irritation; she was worn out, and he used the saw to get away the irritant as the lesser of two evils.

Another theme—and, thanks to modern science, one which has now nearly approached perfection, the correction of errors of accommodation and refraction—is treated by our author at length. Few eyes are free from visual defect. This may be so slight in the majority of cases as to pass unnoticed; but in others, in consequence of some error of refraction, the afflicted may never have known what exact vision meant until, by the use of suitable spectacles, they have been convinced that they had been all their lives seeing as though through a glass darkly.

The book is confessedly written for the laity, and therein we find its chief merit and fault: merit, for giving in a compact form matter which any intelligent person can comprehend,—a possible fault, inasmuch as we so often find books of this character serving as sign-posts on the roadside, pointing the way to the doctor's office. A noticeable feature in the work is the subject-matter chosen to illustrate the use of test-types. In Snellen, we have a paragraph from Roman history. In the American edition of Stellwag, we have (very appropriately) a paragraph from Bancroft. Dr. Jeffries has, in this connection, a less classic, though perhaps more profitable, sequence of sentences. For sign No. 1 he commences with the following: "I have in previous articles warned my readers against the purchase of spectacles for themselves without proper advice." This text is repeated in letters of increasingly liberal proportions, until we learn, from characters so ample, that those who run may read that "opticians and people who sell spectacles are quite incapable of doing it." After this exposé of the sinful games of the optician, there should be no doubt in the mind of the reader what particular *oculist* should be consulted under the circumstances. H. A.

HARRIS'S PRINCIPLES AND PRACTICE OF DENTISTRY. Tenth Edition. Revised and Edited by PHILIP H. AUSTEN, M.D., Professor of Dental Science and Mechanism in the Baltimore Dental College. With 409 Illustrations. Philadelphia: Lindsay & Blakiston, 1871.

A copy of the tenth edition of this standard work, published under the supervision of Prof. P. H. Austen, has been received. The character of the work is so well known, that it is not necessary to enter into an elaborate consideration of its contents.

In the preparation of this edition the editor secured the aid of several gentlemen well known to the profession as experienced and able teachers; to each of these was intrusted the revision of a special portion of the work. To Dr. Thos. S. Latimer was assigned Anatomy, Physiology, and Pathology; and to Prof. F. J. S. Gorgas, the Principles and Practice of Dental Surgery. Prof. Austen reserved to himself the rearranging of the portion devoted to Dental Mechanism; while Prof. N. W.

Kingsley, whose successful treatment of palatine defects has given him a world-wide reputation, prepared a careful description of the surgical and mechanical treatment of those unfortunate conditions.

The manner in which these gentlemen have discharged their duty is deserving of the highest commendation. The work has been remodeled and brought up to the present advanced views in theory and methods of practice. We will not pretend to say that it is free from errors of omission and commission. Such as we have noticed, however, are of a slight rather than a grave character, and recognizing that criticism is easy and execution difficult, we do not feel disposed to take exception to a work which in the main has been ably edited, but, on the contrary, take pleasure in recommending it to the profession as entitled to a place in the library of every practitioner of our specialty. The illustrations of this edition have been largely increased in number, and greatly improved in appearance, over those of former editions. In this particular Prof. Austen acknowledges the courtesy of Dr. Samuel S. White in tendering so freely the use of his valuable wood-cuts.

With no desire to institute invidious comparisons, we cannot refrain from directing attention to the fact that the portion devoted to Dental Mechanism, which has been almost entirely rewritten, presents such a careful description of the methods of manipulation in this department, that it alone would well repay one for purchasing the work, although in the possession of previous editions. The concluding paragraph of this department, quoted from the great ceramic manufacturer, Josiah Wedgwood, should be printed in letters of gold, and hung in the office of every practitioner, as a proper response to those who take exceptions to the just charges of experienced and skillful operators :

"All works of taste must bear a price in proportion to the skill, taste, time, expense, and risk attending their invention and manufacture. Those things called dear are, when justly estimated, the cheapest; they are attended with much less profit to the artist than those which everybody calls cheap. Beautiful forms and compositions are not made by chance ; nor can they ever, in any material, be made at small expense. A competition for cheapness, and not for excellence of workmanship, is the most frequent and certain cause of the rapid and entire destruction of arts and manufactures." J. H. McQ.

WEAR AND TEAR; OR, HINTS FOR THE OVERWORKED. By S. WEIR MITCHELL, M.D. Philadelphia: J. B. Lippincott & Co., 1871.

This is a well-timed and valuable treatise upon a subject of importance to every one engaged in the multifarious efforts and strivings characteristic of American life. Coming as it does from the pen of an eminent physician, who has devoted special attention to nervous diseases,

and is regarded as of authority in such affections, the sound advice which he offers should be accepted and followed by the many who are ignorantly or willfully violating the laws of health in their unnatural struggle for existence.

The essay, originally prepared for a popular magazine, and, therefore, intended for the general reader, has been enlarged, and republished in book form, retaining at the same time that simplicity of description which will interest and instruct all who may peruse it.

The author thus defines the object of the treatise, or "tract," as he styles it:

"I have called these hints 'Wear and Tear,' because this title clearly and briefly points out my meaning. *Wear* is a natural and legitimate result of lawful use, and is what we all have to put up with as the result of years of activity of brain and body. *Tear* is another matter: it comes of hard or evil usage of body or engine, of putting things to wrong purposes, using a chisel for a screwdriver, a penknife for a gimlet. Long strain, or the sudden demand of strength from weakness, causes tear. Wear comes of use; tear, of abuse.

"The sermon of which these words are the text has been preached many times in many ways to congregations for whom the Dollar Devil had always a more winning eloquence. Like many another man who has talked wearily to his fellows with an honest sense of what they long need, I feel how vain it is to hope for many earnest listeners. Yet here and there may be men and women ignorantly sinning against the laws by which they should live, or should guide the lives of others, who will, perhaps, be willing to heed what one unbiased thinker has to say in regard to the dangers of the way they are treading with so little knowledge as to where it is leading."

We heartily commend the work to the many in and out of our profession who are in need of the excellent advice it offers, trusting that they may gather wisdom from it, and profit by its teachings. J. H. McQ.

THE MEDICAL COSMOS: A MONTHLY ABSTRACT OF MEDICAL SCIENCE AND ART. George J. Ziegler, M.D., Editor and Proprietor, Philadelphia.

Nos. 1 and 2 of this magazine have been received from the editor. As announced on the title-page, it is "devoted to a résumé of the latest developments in Practical Medicine, representing the advanced ideas of the age from all parts of the world. It will be compendious, demonstrative, practical, progressive, and cosmopolitan;" each number containing sixteen octavo pages, published on the 15th of each month.

In the management of this enterprise, Dr. Ziegler brings to his work an extended experience as editor of the "*Periscope of Medical and*

General Science in their Relations to Dentistry," in the DENTAL COSMOS. The same tact which he has displayed in the discharge of his duties in that department, will insure him a fair share of success in this new effort. The price of the magazine is $1.00 a year.

J. H. McQ.

SELECTIONS.

CHARGES FOR DENTAL OPERATIONS.

THE following communication, published in one of the city papers, presents such a just and proper view of the case in point that it seems well worth republishing in our pages:

EDITOR EVENING STAR:

A recent issue of your popular paper contained an article from the *Pittsburg Leader*, headed "Dental Extortion." It is unfortunate, alike for the people and profession, that "Public Opinion" cannot appreciate the difference between "elaborate successful dental operations" and "unsuccessful cheap tooth carpentering."

The case in point may or may not be extortionate, but in twenty years' experience I have found that the difficulty in regard to price almost invariably originates in the patients delaying until they need an unexpectedly larger amount of work, rather than from the dentist charging more than the operation is worth.

It is a melancholy fact that a majority of intelligent people do neglect their teeth, and those of their children, to a shameful and ruinous extent. They give them but little thought, and less attention, until compelled by the agony of toothache; then, from a want of knowledge and appreciation of the subject, they apply to the cheap dentist, and lose their teeth, or to the competent and skilled operator, whom they accuse of "exorbitant charges," because he cannot afford to devote his time and energy for less than a respectable remuneration.

It does not follow, however, that those who charge the most are the most skillful. The most reliable dentists are those who are naturally expert, kind, and judicious; who devote their best energies to the interests of their patients, and perform successful operations with the least possible pain or annoyance.

Considering the eminent degree of perfection to which the science of dentistry has attained, there is no reasonable excuse for educated and refined people neglecting their teeth to the disgraceful extent that they do. Half the gentlemen we meet endure disgusting mouths. They think they "cannot afford the expense" of a little dentistry, yet spend hundreds of dollars annually upon amusements and health-destroying luxuries.

Many ladies dress themselves and their children, and feed on candies and delicacies, without regard to expense, and cry "dental extortion" from mouths that they would be ashamed to have a respectable dentist look into.

It is time the people realized the fact that their teeth are destined to premature and rapid decay, and that the only science available to save them from utter ruin is deserving of equitable remuneration.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Duration of Animal Life.*—The duration of the life of any particular animal depends on its kind of structure, elementary and anatomically, as well as upon its place and mode of subsistence. Some have their lives extended to a century, whilst others live but a few hours. If we examine the longest lived, such as some reptiles, the whale, some kinds of birds, the elephant, and man, we will find the tissues of which they are composed are so slowly changed, under the normal condition of their lives, the growth, absorption, and renewal of them being of such a character, that the induration which makes the decrepitude of age, is slow in taking place. The land tortoise, a reptile well known for longevity, is constructed of a gelatinous muscular fibre, with comparatively soft bones and shell. He lives on vegetable matter, moves about slowly, becomes fat, and is torpid during the cold weather. With few enemies to molest him when incased in his shell, those that pass from the egg state to this defense live year after year in lazy security, and answer the purpose of their creation. They do not harden and grow stiff by excessive labor as do man, the horse and the dog, and thus become prematurely old. Fish, particularly the larger kinds, attain great age. Whales are supposed to live a century. But little accuracy can be expected in computing the years these monsters roam through the different seas, but evidence from harpoons bearing ship-marks and dates, found imbedded in captured whales, is conclusive that the adult whale will live the greater part of a man's life without undergoing much change. The slow propagation of these monsters, the softness of their muscular fibre enveloped in fat, their food, all tend to that slow assimilation and expenditure of nutritious matter, which is most consistent with a long life.

"The peculiar life element, nitrogen, plays an important part in the duration of animal existence. Where the food consists almost entirely of nitrogenous compounds, such as flesh, the greater amount of vitality imparted to such as live on this food, hurries them through their existence, other conditions being equal, in a shorter time than those which feed on a less stimulating nourishment. The tortoise and the whale are supported by vegetable, and other matter, that contains but little nitrogen compared with the food of carnivorous animals. The whole lion tribe, whatever may be their magnitude and organization, soon show symptoms of age. The exertion necessary to procure food strains every muscle to its greatest tension, and these muscles need constant supplies of highly animalized matter to restore their waste. This wearing away, and renewal, harden the tissues that are thus constantly in a state of action until they become unfit to perform their perfect functions, and at a period, early, compared with the time it took to bring them to maturity, these carnivora fall into decay. An old, worn-out lion is not unusual in the jungle. The buffalo, rhinoceros, and hippopotamus, less stimulated by their vegetable food, and less exercised in its procurement, live to a greater age.

"Without bringing other examples in proof of the kind of food and exertion necessary to maintain life having an influence upon longevity, the laws that operate to this end, when duly considered, will show the harmony of the whole animal economy. The time appointed for the individuals of each race to live seems adjusted to the accomplishment of their peculiar work. The ephemera, in the sunshine for a few hours, fulfill their function and die. Their larvæ are longer in coming to maturity, but one short season rounds the whole existence, from the embryo to the perfect insect, and during these stages, whether it has been created for devastation or to be devoured by some other, the wave of life has swelled and subsided. All that remains can rest until another season, when by the air and the sun it will be set in motion to repeat the same phenomena. Other beings, having purposes to accomplish that cannot be embraced in so short a period, have a slower organization.

"It would be curious to trace the connection between the elements of the air and influences of the sun in the life process, and to accurately determine how much nitrogen, one of the elements of the air, and the principal constituent of all the vital parts of animals and plants, has to do with the duration of organic existence. That kind of structure requiring altogether food of which this element constitutes the greatest part, such as the viscera and flesh of animals, should, with the vigor imparted to it by such aliment, live as long as that depending on the scanty supply of nitrogen obtained from vegetables, is not consistent with the idea that the decrepitude of old age is nothing more than the hardening of tissues by the amount of resistance they have had to overcome. The life force is most rapidly and most powerfully expended in the carnivora, and if they are such as by their habits require a daily supply to meet the exercise to which they are daily subjected, their lives must be shorter than those as continually, although not as powerfully called into action, that feed upon vegetables. In the latter, the life processes being slower, induration is later in causing decrepitude." —(James B. Coleman, M.D., in *Beecher's Magazine; Sci. Amer.*)

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"*Effect of Exercise upon the Bodily Temperature.*—Dr. Clifford Allbutt has contributed a paper to the *Alpine Journal*, from which we make the following extracts (*Med. Times and Gazette*): 'In the summer of 1870 I made it one of the lesser aims of my Swiss ramble to ascertain how far the temperature of the body was changed by muscular exertion. . . . . It may excite the angry impatience of some of my readers to be told that the effect of exercise upon bodily temperature is very trifling. It seems absurd to tell a man who is toiling up a steep snow-slope about 11·45 A.M., under a blazing sun, that if he thinks he is decidedly hot he is wholly in error, and that his temperature, if raised at all, is raised in a measure only perceptible to a very delicate thermometer. . . . . I may venture, perhaps, with more impunity to reassert this fact now, as most of my readers are far away from slopes of 45°, and are shivering in their easy-chairs under the rigors of an English spring. The "general reader" has probably been made aware that modern men of science have shown that all forms of force, such as heat, light, motion, chemical action, vital action, and the like, are mutually convertible, the one into the other; or rather that, indeed, they are but various manifestations of one thing—motion; motion of mole-

cules or motion of masses. Heat, for instance, is a motion of molecules; a climber upon a slope represents the motion of a mass, and the one kind of movement is convertible, and constantly being converted, into the other. Food taken into the blood, if so directed, will raise the man through 14,000 or more feet, as a ton of coals, if so directed, will carry a locomotive along a certain length of railway. In each case, by a process which differs only in detail, is heat converted into a motion. It might be expected, therefore, that a man ascending Monte Rosa would lose in heat what he expends in movement; for on his arrival at the top he represents a certain definite amount of force derived from combustion of food in his body. . . . . The average temperature of the human body is about 98·5° Fahr., and it may vary between 97·5° and 99·2°, with a few tenths of indifference above and below. To rise to 100° is, however, to become slightly but decidedly feverish, and temperatures of 105°—110° are positively and rapidly destructive. On the other hand, temperatures below 97° show danger of an opposite kind, and signify a depression of vitality below the limits of health. It is clear, then, that if the body is to survive, its temperature must preserve a constant level, or rather it must move in a definite curve, the place of which is constant for the same hour of every day, or nearly so. . . . . M. Lortet denies, upon the strength of his own observations, that the body has the power of making up for rapid conversion of heat into mechanical work during an ascent. He says that, not only on ascending Mont Blanc—which he did, I think, twice,—but also on climbing little hills at home, his temperature underwent very serious depressions, amounting to 5° Fahr. and more. Such depressions I twice noted, but one was during a descent, and the other during a gentle ascent of lower slopes. . . . . In my own case, I believe, the two depressions of temperature were due to lack of fuel. . . . . I cannot but think that if a warm-blooded animal has stomach enough to assimilate plenty of food, a strong heart to propel the food through the lungs, and lungs of capacity sufficient to burn it rapidly off, such animal will not be liable to lose the balance of his forces during wholesome exertion. I am disposed to think that no better test could be found than the thermometer to decide the wholesomeness of exertion in different persons; and if I may reason from myself to others, I should say that the effect of hard exercise in a mountainous district is to accelerate the morning rise, to carry it two- or three-tenths above the average level of health, to favor the somewhat earlier occurrence of the evening fall, if the exertion be ended, to make the fall more rapid, and to carry it again one-tenth, or perhaps two, below the usual night level of health. Also, that any depression during exertion signifies either deficiency of food or inefficiency of internal work.'"

Alcohol, its Effects on the Human System.—Dr. N. S. Davis, of Chicago, Ill. (*Chicago Med. Examiner*), in an interesting paper on this subject, says "that the subjoined propositions appear to be fully established: 1st. Numerous chemical analyses of the blood and different tissues, by different experimenters, show that when alcoholic drinks are taken the alcohol enters the blood and permeates with it every part of the body. 2d. An equally reliable series of experiments have shown that the alcohol undergoes no chemical change in the system, but is eliminated through the excretory organs, more especially the lungs and

kidneys, generally within a few hours after it is taken. This position has long been disputed, but it was finally fully established by the results of the well-devised and carefully executed experiments of Lallemand, Perrin, and Duroy. 3d. While the blood is circulating through the system, the alcohol diminishes the sensibility of the brain and nervous system in the same manner as other anæsthetics, and also retards the active changes in all the tissues; and consequently diminishes the sum total of eliminations or excretions in a given period of time. The numerous and patient experimental investigations of Prout, Sandras, and Bouchardet, Boker, Hammond, and others, have removed all doubts as to the truth of this proposition. 4th. By diminishing the atomic changes in the tissues of the body, and the sensibility of the nervous system, the alcohol by its presence also diminishes the temperature, the strength, and the power of endurance. That its presence in the system reduces the temperature, was fully established by the results of a series of experiments performed by himself in 1850, some of which were repeated in 1867. These experiments consisted in testing the actual temperature of the body every half-hour, with a delicately graduated thermometer, for three hours after a moderate drink of alcoholic liquor. The tests were applied to both wine and whisky. These results are confirmed by the observations of Magnus and others in Europe.

"He is compelled to designate alcoholic drinks as anæsthetic and sedative,—anæsthetic to the nervous system, and sedative to the properties of the tissues. As such they are capable of being used to fill a limited number of indications in the treatment of diseases. And yet there are other well-known agents in the materia medica that will meet the same indications equally well, or even better. So true does he deem this assertion, that for twenty years he has not prescribed for internal use the amount of one pint of alcoholic drinks annually, including both hospital and private practice."—(*Med. Record.*)

Hydramyle as an Anæsthetic.—The *Med. Times and Gaz.* says this new anæsthetic "has been again administered during the present week by Dr. Richardson for short operations, and with continued favorable results. The vapor is so rapid in its action that, in a case of extraction of a molar tooth, by Mr. Peter Matthews, on Monday, the patient was rendered insensible, the operation was performed, and recovery was completed, in fifty seconds. For tooth-extraction, Dr. Richardson lets the patient inhale for twenty or twenty-five seconds, and then, although there is still consciousness, he withdraws the vapor. After this, a deep but brief stage of unconsciousness comes on, during which the operation is carried out. The delay in the production of anæsthesia is due to the insolubility of the hydramyle,—that is to say, after the lungs are charged with the vapor, time is required for the blood to take up the narcotic and carry it to the nervous centres. The same phenomenon may be observed, in a lesser degree, from bichloride of methylene and from methylic ether. For short operations, such as tooth-extraction, the occurrence of deeper insensibility after the inhalation has been stopped is an advantage, and the fact that the insensibility intensifies for a short time as stated, will have to be specially remembered by administrators."

Local Anæsthesia for Extracting Teeth.—At the last meeting of the Illinois State Medical Society (*Chicago Med. Examiner*) "Dr. Jenks

stated that he had found a mixture of chloroform, tinct. opii, and tinct. aconite applied locally to the gums, to produce all the anæsthesia necessary for extracting teeth."

"*Wisdom Teeth.*—Darwin, in his 'Descent of Man,' writes the following of 'wisdom teeth:' 'It appears as if the posterior molar or wisdom teeth were tending to become rudimentary in the more civilized races of man. These teeth are rather smaller than the other molars, as is likewise the case with the corresponding teeth in the chimpanzee and orang; and they have only two separate fangs. They do not cut through the gums till about the seventeenth year, and I am assured by dentists that they are much more liable to decay, and are earlier lost, than the other teeth. It is also remarkable that they are much more liable to vary both in structure and in the period of their development than the other teeth. In the Melanian races, on the other hand, the wisdom teeth are usually furnished with three separate fangs, and are generally sound; they also differ from the other molars in size less than in the Caucasian races. Prof. Schaaffhausen accounts for this difference between the races by the "posterior dental portion of the jaw being always shortened" in those that are civilized, and this shortening may, I presume, be safely attributed to civilized men habitually feeding on soft, cooked food, and thus using their jaws less. I am informed by Mr. Brace that it is becoming quite a common practice in the United States to remove some of the molar teeth of children, as the jaw does not grow large enough for the perfect development of the normal number.'"—(*Phila. Ledger.*)

Fossil Teeth.—In the *Proceedings of the Academy of Natural Sciences of Philadelphia*, it is stated that "Prof. O. C. Marsh, of Yale College, exhibited at one of the meetings of the Academy a tooth of a new species of *Lophiodon*, from the Miocene of New Jersey, which was the first indication yet discovered of remains of the Tapiridæ on the Atlantic coast, or of the genus *Lophiodon* in this country, east of the Rocky Mountain region. The tooth, which was in a perfect state of preservation, was the first true molar of the left upper jaw. It measured across the crown seven lines in antero-posterior diameter, and eight and one-quarter lines in transverse diameter. This would indicate an animal intermediate in size between *L. occidentalis* and *L. modestus* of Dr. Leidy. From the latter species it may readily be distinguished by the enamel of the crown, which is smooth and not wrinkled. As this species is evidently distinct from any described, Prof. Marsh proposed for it the name *Lophiodon validus*. The specimen was found in the miocene marl of Cumberland County, New Jersey, and apparently at about the same horizon as the *Elotherium Leidyanum* and *Rhinoceros matutinus* Marsh, from Monmouth County, in the same State."

At another meeting, "Prof. Leidy stated that he had recently received a small collection of fossils for examination from Prof. J. D. Whitney, who obtained them from California. The specimens are as follows:

"A fragment of an inferior molar, apparently of *Mastodon americanus*. Of this specimen Prof. Whitney remarks, that it was obtained from a depth of 80 feet beneath the basaltic lava of Table Mountain, Tuolumne

County, California, where it was found in association with remains of human art.

"A much-worn lower molar of a large horse, probably the *Equus pacificus*. From 16 feet on Gordon Gulch. The triturating surface of the crown measures 13½ lines fore and aft, and 10 lines transversely, inclusive of the cementum. Two equine molar teeth, which, according to the accompanying label, were obtained 350 feet below the surface, at Soulsbyville, Tuolumne County, California. One is an unworn upper back molar, apparently of a species of *Protohippus*. It is moderately curved from behind forward and downward, but only slightly from within outward. It is 21 lines long in a straight line. Its greatest breadth above the middle, fore and aft, is nearly 9 lines; its thickness, about 7 lines. The other tooth is a lower molar, about one-third worn, probably of the same species. The triturating surface is 10 lines fore and aft, and nearly 7 transversely.

"Two teeth labeled 'Found 10 feet below the surface at Dry Creek, near Bear Creek, Mercer County, California.' One of the specimens appears to be the portion of a canine tooth, and the other is an incisor. They resemble in form the corresponding teeth of the lama, and probably belong to a species of the same genus. The incisor is about 1½ inches in length; the crown externally is 11 lines long and 4½ lines wide."

Extensive Cleft of Hard and Soft Palate, closed at a Single Operation.—Dr. Wm R. Whitehead, of New York, reports in the *Amer. Jour. Med. Science* an interesting case, from which we extract the following: "During the year 1868, in two successive numbers of this Journal, I called attention to the advantages of an operation for cleft palate, known as muco-periosteal uranoplasty. Subsequent experience has fully confirmed the favorable opinion which I first formed of this operation; and, from time to time, I have published, in other periodicals, the result of this experience, and in each case the modifications which it suggested. The history of the following case is, in some respects, more instructive than the others, especially from the fact that after the closure of the cleft, an unsuccessful attempt was made to lengthen the soft palate. It is proper to state that Passavant, of Frankford, and Mr. Francis Mason, of the Westminster Hospital, having fully considered the disadvantages which attend sometimes the improvement in speech after a successful closure of a cleft palate on account of the shortness of the palate, have each endeavored to obviate this defect. Mr. Mason's operation, which is confined to a single case, does not lengthen the palate, but is designed to liberate it, so that the action of the levator palati muscles will draw it upward and backward. Passavant pared the inner borders of the palato-pharyngeus muscles and united them by suture, which procedure compelled the patient to breathe entirely through his mouth, the inconveniences of which are manifest. My own operation was for the purpose of adding to the length of the palate by the dissection of two lateral flaps. So far, however, as regards the benefit to the patient, in the improvement of his speech and otherwise, of closing with his own flesh an extensive cleft of the roof of the mouth and soft palate, instead of with an obturator, the relation of the following case will, I hope, bear additional testimony to my previously published statements. In at least two of my cases

there was a permanent reproduction of bone in the periosteal flaps with which the cleft was closed. To Langenbeck, it is known, is due the credit of having established the fact, that the muco-periosteal tissues, with which a fissure in the hard palate is closed, may reproduce bone. But the acceptance of a scientific truth, like this one, is often slow and attended with difficulties and doubt; I am not disposed on that account to relax my efforts to further demonstrate it, because it is already supported by facts that are patent.

"To those who will take the pains to study carefully the details of periosteal uranoplasty, I believe the closure of even a very wide cleft of the hard and soft palate, at one sitting, will not be found a difficult operation. The remark has been made to me, that this operation requires a special manipulation. The same may be said of other operations, which have, at first, offered some difficulties; but with the aid of the gag and instruments that I use, especially the needle, this operation can be done with much greater facility.

"CASE.—J. C., aged thirty-five, was sent to me by Dr. John W. Warner, of this city. The patient had a cleft of the soft and hard palate which extended to the alveolar arch in front. Before the operation he pronounced pretty well all the letters of the alphabet except the following: G, nasal; J, nasal; and K, slightly nasal. Drs. J. L. Little and Bozeman, of this city, Dr. Giberson, of Brooklyn, and other physicians, witnessed the operation, which was done Dec. 16th, 1870. The patient was etherized, and his mouth kept open with a gag, made of steel, and nickel-plated, well suited to the operation for cleft palate while the patient is under the influence of ether. The instrument is provided with a sliding tongue-depressor, which adapts it to different patients, and has two stout ratchets, kept in position either with a spiral spring or slightly curved piece of steel, which presses on the upper end of the ratchet. It is necessary to wrap a piece of yarn around the part of the wire which presses on the gum whenever the instrument is used for an operation. With a view of regulating the depression of the tongue, the present case suggested an improvement in this gag, which consists in having the tongue-depressor attached by a double hinge-joint, and provided with a strong and flat steel spring; which at one end has teeth that catch against corresponding teeth on the gag, so that, by bearing the finger firmly on the depressor, the depression of the base of the tongue can be increased at will, and without removing the gag from the mouth. By this means, the lower part of the pharynx can be made more accessible for division very low down of the palato-pharyngeus muscles, and for other manipulations on this part of the throat. These muscles were each seized low down with a pair of forceps, and divided with long curved scissors. The levator palati muscle of each side was thoroughly divided, and also the *muco-periosteal membrane which lines the lower part of the internal pterygoid plate.*

"The next step in the operation was to make the side cuts, along the teeth, through the muco-periosteal tissue of the gum, to the bone. These cuts extended from beyond the last molars to the external incisors on each side. The periosteal tissue of the gum was detached from the bone on each side, *except at the anterior palatine foramen, and posteriorly at the foramen where the superior palatine artery emerges.* The edges of the cleft were widely pared. During the paring, the edges of the flaps were held with a tenaculum like Sims's,

but with a hook nearly the fourth of an inch long, and bent at right angles to the shaft.

"Nine or ten silver sutures were passed, and were adjusted and twisted in the same manner that Sims does in the operation for vesico-vaginal fistula. After the operation, some lint was stuffed into the side cuts, and the patient was put to bed, and during two weeks nourished with soups and strong broths. Each day the lint was removed, and the side cuts, and also the throat, washed out with carbolized spray, by means of Richardson's nebulizer.

"On December 30th, fourteen days after the operation, the union was complete and firm throughout the entire length of the cleft, and in the course of three or four weeks the side cuts were completely healed, and the previous chasm in the hard and soft palate, entirely closed. But the new palate was too short, and too tense, to perform properly the functions of a normal velum palati.

"This patient was exhibited to about forty gentlemen of the Medical Library and Journal Association, and called forth considerable comment about his speech, which was generally admitted to be quite satisfactory. He was requested to read aloud, to pronounce the letters of the alphabet, and to count. It was explained to the gentlemen present that an operation would be attempted to lengthen the palate. About the first week of last February, assisted by Dr. Henry Shiff, of this city, I endeavored, by a difficult and laborious dissection of the palato-pharyngeus muscles, to form flaps, with which to lengthen the new velum palati. Having seized, with a pair of forceps, the palato-pharyngeus on the right side very low down, I divided this muscle and a part of the mucous membrane of the prevertebral region, and dissected upward with a pair of curved scissors a flap more than sufficient to form, with a corresponding one on the opposite side, a long and dependent curtain to the new velum. My dissection was so extensive that I impaired the vitality of the flap, but one of which was dissected out, and, having recognized my error before commencing to dissect out the other flap, I desisted from the operation, and was very fearful that the good results of the first operation would be lost. There was a slough of the part and considerable loss of substance on the right side, and some retraction of the palate on this side, but without impairment of the speech. I last saw him on April 14th; the contraction of the palate on the right side was, I thought, less. He said that his speech was a good deal improved, and that strangers understood him better. He also stated that his relatives and friends noticed an improvement in his speech. At all events, I was much pleased that no bad consequences resulted from the second operation which was attempted. The loss of substance was confined to a part of the palato-pharyngeus muscle of the right side, and did not affect the newly-made palate, except by a certain degree of contraction backward, which possibly is of some benefit to him.

"In pronouncing the letters of the alphabet, the J was quite distinctly pronounced; the sound of G was, I thought, less nasal, but that of K was still nasal, and indeed about the same as before the operation."

"*Anhydrous Glycerin.*—M. Eberhard has called attention to the power possessed by absolutely anhydrous glycerin of withdrawing water by an exosmotic process from tissues to which it is applied. Marion Sims some time ago demonstrated that a ball of lint dipped in

glycerin and applied to a freely suppurating surface arrests the secretion. Furst has also applied the glycerin plug in a large number of cases of fluor albus, and M. Eberhard states that he has been very successful in applying the same means in similar cases."—(*Med. and Surg. Reporter.*)

"*Pyogenesis.*—The time is not far distant when union by the first intention will be the rule, and the occurrence of suppuration not only in wounds, but in all other cases, even in smallpox, will be as much an opprobrium as bleeding now is in medicine. As the production of pus is the result of the degeneration of protoplasmic matter and corpuscular structure, and suppuration always destructive and objectionable, every effort should be made to prevent it. That this can be done most effectually, the recent progress of discovery amply demonstrates. The principles whereby this desirable result may be obtained are exemplified in the practical operation of the laws of hygiene so clearly illustrated in applied physiology, observations upon some of which we present in this number from various authors. It will thus be seen that by appropriate constitutional and local influences, resolution and healing by first intention may be more certainly insured, while suppurative, putrefactive, and other analogous forms of degeneration be more positively prevented. The general indications, therefore, are to preserve and restore healthy innervation, circulation, nutrition, secretion, and excretion, by such systemic and topical measures as may best meet the exigencies in each particular case, using for the more immediate therapeutic purposes the most approved nervines, alteratives, astringents, antiseptics, etc., as will allay irritation, diminish hyperæmia, promote resolution, encourage healing, increase tonicity, and restore healthy action. The more specific means which may be briefly noticed are good food, pure air, vegetable and mineral acids, with the various organic and dynamic tonics, nervines, antiseptics, etc., now so prominent as soothing, supporting, purifying, and healing agents, the special details whereof we shall recur to from time to time, as opportunity offers, our space being too limited to do more than merely allude thereto at present."—(Ed. *Medical Cosmos.*)

"*Tea-Leaves to Burns and Scalds.*—Dr. W. H. Searles, of Warsaw, Wis. (*Chicago Med. Examiner*), some few years since, accidentally found that a poultice of tea-leaves applied to small burns and scalds, afforded immediate relief. He has given it a more extended trial since then, and has come to prefer it above all other remedies in the first stage of burns and scalds. The leaves are softened with hot water, and, while quite warm, applied upon cotton over the entire burned surface. This application discolors and apparently tans the parts, and removes the acute sensibility and tenderness."—(*Med. Record.*)

"*Ulceration of the Frænum Linguæ in Pertussis* is referred to, by a writer in the *Glasgow Medical Journal*, as a diagnostic sign of this disease. This lesion has been before noticed by a few writers, who have considered it a specific form of ulceration. The writer quoted considers it to depend upon friction of the frænum against the lower incisors during the spasmodic expiratory efforts, and it was discovered by him in 111 out of 252 cases of children in whom the disease was well marked; its location being in front of the frænum, excepting when

there was absence or malformation of the lower incisors. It never occurred before dentition had taken place, nor in such children as did not protrude the tongue during the cough."—(*Ibid.*)

Treatment of Cicatricial Contractions after Burns of the Face.—Dr. Gurdon Buck (*Med. Record*) lately offered some remarks on this subject to the New York Academy of Medicine, and "exhibited the patient, a boy about four years old, who had been under his care since November last. Dr. Post also saw the patient in consultation. The child was severely burned, when about two years of age, about the lower lip, chin, neck, and breast. Contraction ensued, which brought the chin down near the sternum, and to the left side. Saliva constantly flowed from the mouth when first seen Four ingenious operations were made while the child was in a state of etherization, and a brace was applied to keep up a constant outward contraction. A stiff padded leather stock, or band, was attached to the upper portion of the contrivance, and graduated by means of a screw; another great advantage of the instrument being the free play of the chin, the patient being compelled to raise the head to avoid the stock. The patient had worn the brace constantly, with the exception of at night, and the speaker proposed to keep it on part of the time this summer, when out of bed, thus maintaining the parts until all contraction is avoided. The contour of the chin is now restored to its former character, the cicatricial surface is smooth and flat, and the saliva no longer flows involuntarily from the mouth.

"Dr. Buck observed that the free division of all cicatricial formation was advocated by Dupuytren and Dr. Earle. Dr. J. H. Janes, of Exeter, has also used an instrument in the treatment of these cases, and in most of them a permanent cure was effected. (Vol. xiii. Medico-Chirurgical Transactions.)

"The speaker's apparatus was thought to be better than Dr. Janes's brace. For the promotion of an artificial scab collodion was recommended; thus avoiding the great inflammation which generally follows the ordinary treatment.

"A child two and a half years old, with a contraction of the ring and little fingers, is now under the care of Dr. Buck. The bands were divided and the wounds covered with collodion. He thought that the hand would be restored to its original functions.

"In regard to the application of the instrument, Dr. Buck stated that energetic action was required, and the brace should be put on early, as that was the time to watch the patient."

"*Salivary Calculus, obstructing Wharton's Duct and causing Swelling of the Submaxillary Gland and Tongue.* Under the care of Dr. Ramskill, London Hospital. Reported by Mr. Stephen Mackenzie, Resident Medical Officer.—A. K., admitted April 4th, 1871. The patient, an intelligent, healthy-looking lad, gave the following account two days subsequent to his admission: He has had 'mumps' several times during the last few months. By mumps, he means a swelling which made its appearance on the right side of the neck just below the jaw, which was not painful, but 'felt like a weight.' The swelling generally attained the size of a pigeon's-egg, but did not interfere with eating, and, after lasting about three days, would subside. He has never had any swelling of the testes coincident with or following the 'mumps.'

He has not been feverish at these times, nor have any other persons in the house been similarly affected.

"On April 2d, he was in his usual health. On April 3d, he noticed in the course of the day that there was a little lump near the right angle of the lower jaw. In the evening it was a little larger, and 'felt like a weight;' but it did not prevent him eating his supper, nor did he feel in any way ill. When he awoke on the morning of April 4th, he found he could not close his mouth, and 'could only breathe out of his nose.' He was unable to swallow his tea at breakfast, and noticed that the swelling under the jaw had much increased. He felt ill and feverish, and could not get his breath well. His mother took him to Victoria Park Hospital in the afternoon, where he was seen by Dr. Bäumler, who advised his being brought here, telling the mother that, if his breathing got worse, some operative measure might be necessary. On admission, it was observed that his mouth was partially open, and that he was unable to close it on account of the swollen condition of the tongue. The latter appeared pushed somewhat backward, so that the floor of the mouth was easily seen, and this was occupied by viscid saliva, which overflowed and ran out of the mouth. The tongue itself was moist, and of a natural color, but so swollen as to occupy the whole of the oral cavity with the exception of the sublingual space. There was a somewhat hard, smooth swelling, unaccompanied by any redness, extending from the right angle of the jaw to the middle line. The patient could neither speak nor move his tongue. He had rather an anxious look; but his breathing did not seem particularly embarrassed. He was sent to bed, and ordered to suck ice continuously. In the evening his condition was about the same. His breathing was 24 in the minute, not labored, and there was not any recession of the epigastrium or intercostal spaces during inspiration; pulse 124; temperature 101·5°. He was able to swallow fluids, but with considerable difficulty. As his bowels had not acted for several days, he was ordered an aperient. He was ordered to continue sucking the ice, and no other medicinal treatment was adopted. About midnight I was told that his breathing was more difficult, but when I saw him shortly after, he was asleep and breathing quietly. His mother, who stayed with him, said that he would sleep for about ten minutes at a time, and then awake as if about to choke.

"April 5th. He says that early this morning he found something under his tongue. He did not know what it was; 'Thought it might be an orange-pip, or a piece of a tooth.' He took it out of his mouth, and put it by to show. In a very short time after finding this, 'his tongue felt much smaller, and he could breathe through his mouth.' When I saw him in the morning he was able to close his mouth, and could move his tongue about in it; but the latter was still a good deal enlarged, and its surface covered with a dirty-white fur. When he raised his tongue, a round, ulcerated opening could be seen on the right side of the frænum in the sublingual space, and through this there welled up a thin, purulent fluid. The swelling beneath the jaw was slightly diminished in size. He could swallow much more easily, and could articulate, but in an indistinct manner. Pulse 90; respiration 23; temperature 99°. The object he found under his tongue was a calculus. It was of the shape, but about double the size, of an oat-grain, of a yellowish-white color, and corrugated on the surface. 6th. Tongue almost of its natural size; the swelling beneath the jaw much

diminished. A little purulent matter still wells up through the opening beside the frænum. Pulse 88; respiration 20; temperature 98.4°. He was allowed to get up and to take solid food. 7th. The opening in the sublingual space much smaller, and does not exude any fluid. There remains a swelling beneath the lower jaw, commencing a little anterior to the angle, which is composed of three separate segments. There is a fourth part, which proceeds from these others towards the middle line. This is apparently Wharton's duct, thickened. Tongue clean and of a natural size. He feels perfectly well, and his appetite is good. He left the hospital on the following day, feeling quite well, but slight swelling of the submaxillary gland remaining."—(*Med. Times and Gaz.*)

Salivation from Red Rubber Dentures.—Dr. P. A. O'Connell writes (*Boston Med. and Surg. Jour.*): "My attention has been called to a case which points to the possibility of the occurrence of *salivation* and the *constitutional effects of mercury*, from the use of artificial teeth, and the importance of the circumstance has seemed to be sufficient to justify a mention of it; so that inferences may become either corrected or confirmed by the observations of others of the profession.

"The patient, in the case referred to, was a lady, who had used the artificial teeth that are now accused of having produced trouble, between two and three years. Before using them, her general health was good. While using them, her health became poor (*wasting away*), and proceeded gradually from bad to worse, resisting every mode of treatment. She exhibited no special cause of illness, until the occurrence of salivation and sore mouth drew attention to the teeth. Then it was found that the plate upon which the teeth were mounted, which was a suction plate of the red rubber kind, presented a corroded appearance on the surface which came in contact with the roof of the mouth. And the circumstance that this kind of rubber plate is made up to a great extent of the sulphuret of mercury, suggested the possibility of the general ill health resulting from this cause. The teeth were removed, of course. The mouth became well speedily; and without any further treatment the lady's general health began to improve immediately in a very remarkable manner.

"Upon mentioning this case to some medical gentlemen, it recalled to the mind of one of them another instance of salivation, resulting, apparently, from the same cause. Here, too, the disuse of the red rubber plate allowed the mouth to become well; and a set of teeth mounted on dark rubber was used afterward without any inconvenience resulting.

"The red rubber which is used in making the plates upon which artificial teeth are mounted, receives its color from the sulphuret of mercury, which is mixed with it very intimately, and constitutes generally about one-third of the mass. This preparation of mercury is very insoluble, resisting, in the chemist's laboratory, the strongest acids; and it is difficult to understand what combinations can have taken place in the mouth to render it liable to absorption. It is rendered soluble by mixture with the sulphide of potassium, but one would suppose that it would be protected sufficiently by the rubber with which it is thoroughly mixed and baked.

"Are artificial teeth, under any circumstances, capable of producing salivation?"

"*Salivation Consequent upon Artificial Teeth.*—In answer to Dr. O'Connell's question, I say that I have seen several cases such as he describes, where the teeth were upon *red rubber* plate. At this moment, I can recall three such cases seen within a twelvemonth."—(Charles E. Buckingham, *Boston Med. and Surg. Jour.*)

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Iron-Alum as a Hæmostatic.—A correspondent of *The Lancet* recommends this as "a most powerful hæmostatic. A strong solution of this salt in glycerin is admirably adapted for the arrest of continued profuse bleeding, where there is no large vessel to be seen and secured by means of the ligature or by torsion. For hemorrhage from the gums, it may be applied in powder upon a piece of surgeon's lint; while epistaxis may be checked by stuffing the nostrils with lint soaked in a saturated solution of this preparation. Of course it is not suitable for arresting hemorrhage from vessels much above the size of capillaries; but by this capillary hemorrhage a patient may lose a large quantity of blood, which, in a person below the standard of health, is deleterious, if not dangerous. When incisions are made into congested parts, we have often a great deal of capillary bleeding, which the preparation in question is eminently fitted to control. Internal hemorrhages may be treated with iron-alum with advantage, particularly gastrorrhagia and enterorrhagia, as well as bleeding from the rectum, where it is to be used as an injection. In these last cases it is advantageously combined with some of the preparations of opium. It may be that iron-alum will be another antiseptic. For this purpose, I have not had sufficient experience of it to speak."

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"*Monochromatic Illumination in Microscopy.*—Whenever I want to make out some of the minutest details of any organism, or to get over any difficult test, and I see that my microscope, after all due preparation, and with the best prospect of light, fails to answer my expectation, I refer, as a last resource, to my prism, and get from it a colored sunbeam. Blue or green are the colors which I prefer; they are the most suitable for the purpose.

"The elimination of every, even the slightest, chromatic aberration obtained by this means increases, in my opinion, the defining and penetrating power of the microscope, and enlarges its dominion on the field of observation. Different other means have been now and then suggested, such as an alcohol light saturated with chlorine or iodine, or a light passed through a stratum of cupreo-ammoniacal solution, or even through a glass of cobalt; all these lights may be very useful and for some special purpose even preferable to any other, as Dr. Woodward observed, speaking of photography; but for direct observations with the microscope, the effects obtained by them are by no means to be compared with the marvelous results of a monochromatic illumination. And I do not think it absolutely necessary for this purpose to have recourse to a beam of the *sun*, which in many countries less favored than Italy is not rarely a mere desideratum, and very often a dim, cloudy thing. A brilliant luminous point of electric light—a light obtained from oxhydrogenic flame—acting upon lime, magnesium, or zirconium, perhaps also the magnesium-wire lamp, may supply the deficiency of the sunbeam. Each of these simply white lights decomposed through a prism, will give a monochromatic illumination sufficient to reveal the

best structural details, which up to this day have baffled the keenest researches of the student."—(Count Castracane, *Monthly Microscopical Journal* and *Amer. Naturalist.*)

"*Waterproof Glue.*—Ordinary glue can be rendered insoluble in water by adding to the water, with which it is mixed when required for use, a small quantity of bichromate of potash, and exposing the articles to which it is applied to the light. Chromic acid has the property of rendering glue and gelatin insoluble, and, as the operation of heating the glue-pot is usually conducted in the light, no special exposure of the articles to which it is attached need be made. It is probable that paper could be rendered impervious to water by pasting the sheets with this prepared glue. The bichromate is said to render rubber particularly hard and unattackable by hot water. The chromated gelatin ought also to be tried on parchment paper, wood, leather, and cloth fabrics. The proportion of bichromate to be taken must be ascertained by experiment; for most purposes, one-fiftieth of the amount of glue employed will be found to suffice,—that is, one pound of dry bichromate of potash to fifty pounds of dry glue.

"Many applications of waterproof glue will readily suggest themselves to our readers. The Albert photographic process is founded upon this property of gelatin, and billiard-balls, buttons, and ornaments are now largely made of the chromated glue."—(*Sci. Amer.*)

Liquid Glues.—F. L. J., of Ark., states (*Ibid.*) that "an excellent liquid glue can be made by dissolving glue in nitric ether. The ether will only dissolve a certain amount of the glue; consequently there need be no fears of making the solution too thick. The glue thus made is about the consistency of molasses, and is doubly as tenacious as that made with hot water. If a few bits of india-rubber, cut into scraps the size of a buckshot, be added, and the solution allowed to stand a few days, being stirred frequently, it will be all the better, and will resist dampness twice as well as glue made with water. The best liquid glue that I have any knowledge of is made as follows: take of gum shellac, three parts; caoutchouc (india-rubber), one part, by weight. Dissolve the caoutchouc and shellac, in separate vessels, in ether free from alcohol, applying a gentle heat. When thoroughly dissolved, mix the two solutions, and keep in a bottle tightly stoppered. This glue is called marine glue, and resists the action of water, both hot and cold, and most of the acids and alkalies. Pieces of wood, leather, or other substances, joined together by it, will part at any other point than at the joint thus made. If the glue be thinned by the admixture of ether, and applied as a varnish to leather along the seams where it is sewed together, it renders the joint or seam water-tight, and almost impossible to separate. The natives of the Maldive and Laccadive Islands, and the Malays of the coasts of Borneo and Sumatra, have a glue which they make as follows: they take the scales of a kind of fish, called by English and American sailors salt-water trout (identical with the salt-water trout of the Gulf of Mexico), and, after thoroughly washing them, place them in a glazed earthen jar, which they stopper tightly, and weight so that it will remain under water. They put this jar in a pot of water, and boil it until the scales are reduced to a semi-transparent viscous mass. This requires several hours' boiling. Care should

be taken that no water or extraneous matter, fluid or solid, be allowed to get into the jar with the scales. The glue thus made is the most tenacious, and, at the same time, the most transparent and beautiful that I have ever seen. I have made it in this country from the scales of perch, trout, and bass. I am informed that a similar glue is made from the bladders of various fishes."

"*Artificial Ivory from Rubber.*—The inventor, Mr. Marquardt, dissolves two pounds of pure rubber in thirty-two pounds of chloroform, and hereupon saturates the solution with a current of ammonia gas. When the rubber has been completely bleached, the admission of the gas is interrupted, and the mass is transferred into a vessel provided with a stirrer, in which it is washed with hot water until the bleaching agent has been entirely removed. During this operation, the temperature may be increased to 185° Fahr., in order to evaporate the chloroform, which, by conducting it into an apparatus of condensation, may again be made use of. The remaining product forms a kind of froth, which, being pressed out, dried, and again treated with a small quantity of chloroform, is finally obtained as a consistent paste. The paste is now mixed with a sufficient quantity of finely pulverized phosphate of lime, or carbonate of zinc, until it assumes the appearance of moist flour. In this condition it is pressed in hot moulds, which it leaves sufficiently hard to be turned, planed, filed, and bored. In order to imitate corals, pearls, enamels, hard woods, etc., it is only necessary to mix the paste with the desired colors previously to its being compressed."—(*Ibid.*)

"*Gabbro Mass.*—A plastic mass, called Gabbro by its inventor, Dr. Schwartz, is composed of thirty-two parts of steatite, thirteen parts of potter's clay, and three parts of soda. The steatite is first ground with water, and afterward mixed with the other ingredients. In a half-dry state, this mixture may be turned into a lathe like wood, and is chiefly employed in making a kind of pottery ware. When used instead of wood, the mass can be colored with aniline, or other coloring matters."—(*Phila. Ledger.*)

"*New Plastic Material.* Rev. F. Moigno.—Very pure and very finely pulverized phosphate of lime (bone-ash) is made into a paste by means of collodium. After having become dry, this substance becomes very hard, and assumes an excellent polish."—(*Les Mondes* and *Chem. News.*)

"*Parchment Paper—(Vegetable Parchment).*—This is made by plunging *unsized paper* for a few seconds into *sulphuric acid* diluted with half its bulk of *water* (the solution having the same temperature as the air), and washing it afterward with *weak ammonia.* This paper, or parchment, is much employed for a great variety of purposes, among others as the membrane used in dialysis. It is but little inferior to animal parchment in strength."—(*Chemist and Druggist.*)

Mouldiness in Mucilage prevented.—"Instead of carbolic acid, corrosive sublimate, etc., the *Polyt. Notizbl.* recommends to add a minute quantity of sulphate of quinia, and suggests that it might also be useful for ink."—(*Ph. Cent. Halle* and *Amer. Jour. Pharm.*)

Refining Gold.—D. G. P. says (*Sci. Amer.*), "Gold can be refined by dissolving it in aqua regia, and then pouring off the solution from the precipitate. Add to the solution a filtered solution of copperas as long as a precipitate is formed. Decant and wash thoroughly. Digest in dilute sulphuric acid, and wash again, and you have pure gold. Melt in a crucible lined with borax, under carbonate of potash."

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"*Coloring Gold.*—Gold is colored by two processes, called the dry and wet color; but the materials used in both cases are the same. They are as follows: one part salt, one part alum, and two parts saltpetre; each material to be pounded separately in a mortar, taking care they are perfectly clean (this is the dry process). After being well pounded they are put into an iron color-pot and slowly heated over a fire. The color must boil gradually, and must be stirred with an iron rod. It will then rise, and then it is ready for the reception of the articles to be colored, which must be not less than 18-carat. They are suspended in the color by 18-carat wire, and kept in motion till the liquid begins to sink, then they are taken out and dipped in aquafortis pickle. The color will rise again, and then another dip, and sometimes two, is necessary to give them the proper color. The wet-color process is a much inferior method, except for gold of lower standard, and then not below 15-carat, as the alloy would suffer so seriously from the coloring. The fact is, coloring is no more than taking from the surface the inferior metals, leaving a thin coating of pure gold."—(*Druggists' Circular.*)

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"*Cement for Stoves.*—There is a first-rate home-made cement for filling up cracks in an old stove or range. The ingredients are wood-ashes and salt, equal proportion in bulk of each, little less of salt; reduce to a soft paste with cold water, and fill cracks when the range or stove is cool. The cement will soon become perfectly hard. Fire-clay (obtained at the stove-dealer's) will sometimes answer, but this home-made cement is always at command, where wood is the fuel used."—(*Boston Jour. Chem.*)

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"*Cutting Glass by the Blowpipe Flame.*—At a recent meeting of the Albany Institute, a member exhibited specimens of glass cutting by the use of the blowpipe, which is specially adapted to cutting tubes of all sizes, thick or thin. A sample of a tube cut spirally in this manner has been sent us. The tube is about $1\frac{1}{4}$ inches in diameter, and is cut from end to end in a spiral, the cuttings not averaging more than $\frac{1}{4}$ inch in distance from each other. The cutting is done by directing the point of the blue flame against the side of the tube. Instantly, a small speck or crack is formed, which may then be led in any direction by directing the point of flame to the part to be cut. In dividing thick and large tubes, it is advised to begin by separating them into large sections, and afterward subdividing these sections, till the required length is reached."—(*Sci. Amer.*)

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Leather for Vise Jaws.—E. J. O., of N. Y., says (*Ibid.*) "he has used, for years, pulverized rosin on the flesh side of clean, dry leather, for sticking leather to vise jaws, with entire satisfaction."

THE

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ORIGINAL COMMUNICATIONS.

FACIAL PARALYSIS DUE TO DENTAL IRRITATION.

BY J. H. M'QUILLEN, M.D., D.D.S.,

PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

Recently a patient came under my care suffering from periodontitis in the first superior molar and the second inferior bicuspid of the right side, in whom the subsequent accompanying phenomena were of such peculiar character that I have regarded the case of sufficient importance to make a record of it.

At the time when the patient, Miss N., aged sixteen, first called upon me, June 16th, 1871, the teeth referred to were very painful to the touch, or on closing the jaws. I was informed that an arsenical application had been made a few days before to each of the teeth with the view of destroying the exposed pulps, and that after making the application the operator, finding that periodontitis had set in, advised the extraction of the teeth. The patient being unwilling to lose them, I was consulted as to the propriety of the operation. On examining the teeth, I found that the devitalized pulps had not been removed; these I succeeded in thoroughly extirpating without causing any pain; on the contrary, the hemorrhage from the pulp cavities following the operation depleted the engorged vessels of the periodontal membrane to such an extent that the painful sensations previously complained of by the patient on the occlusion of the jaws almost entirely disappeared. Under these circumstances, I expressed the opinion that the teeth could be saved; and having syringed out the pulp cavities with tepid water, and then introduced temporary fillings of cotton covered by Hill's stopping, the patient was dismissed (as she lived out of the city) until the following Monday, the 19th instant, when she returned with the statement that the teeth had been perfectly comfortable. The temporary fillings were removed, and then carefully replaced; and after the performance of some other operations of a minor character, the patient left, with an appointment for Thursday, the 22d instant. On

making her appearance at the time named, the teeth were found quite tender to the touch, and on closing the jaw, in addition to this there was an inability to open the mouth as wide as usual, due not to engorgement of the surrounding soft parts (for there was nothing of that kind), but to spasmodic contraction of the temporal and masseter muscles, made painfully evident upon attempting to open the jaws beyond a certain point. The facial muscles of the right side were also contracted, so as to draw the angle of the mouth over to that side and slightly upward, imparting to the face such a peculiar appearance as to attract the attention of the most careless observer,—somewhat similar, indeed, to the "risus sardonicus," characteristic of tetanus.

The patient stated that last February she had a similar experience to that just described, some two weeks after an arsenical application had been made to the pulp of a left superior second molar, which, after continuing for a week or two, disappeared entirely.

Regarding the phenomena presented as due to irritation of the terminal filaments of the sensitive branches of the fifth pair, exciting by reflex action the motor branch of the fifth pair, distributed to the temporal and masseter muscles, and the seventh pair or portio dura, distributed to the superficial muscles of the face, I decided to remove the temporary fillings. After syringing out the cavities and making an application of iodine and aconite to the gum (which afforded much relief to the painful sensations of the teeth), I renewed the fillings and dismissed the patient, with the understanding that she was to call the following day, as I considered the case one of great interest, and demanding prompt, continuous, and radical treatment, apprehending, indeed, the possibility of a permanent facial paralysis being induced, and possibly tetanus. I was prepared to sacrifice the teeth, if necessary.

A week or more, however, passed without seeing or hearing from the patient, when the father called to inform me that the state of affairs remained about the same as when I last saw her. I endeavored to impress upon his mind the importance of my seeing his daughter, and he promised that she should come to town for that purpose. Several weeks, however, passed by without the promised visit. On returning from the meeting of the American Dental Association, at White Sulphur Springs, I was informed by Miss N. that she had called during my absence, suffering severe pain in the two teeth, and not finding me at home, went at once to Dr. F. R. Thomas, and had them removed under the influence of nitrous oxide. There was an alveolar abscess connected with the roots of each tooth.

It is now three weeks since the teeth were removed, and I observed, in an interview with the patient to-day, that the face has assumed its natural expression and perfect play of all the facial muscles, and the

patient could open her mouth as wide as ever, but that after submitting to the introduction of two fillings in the lower jaw, she complained of a feeling of cramp in the temporal muscle, and the movement of the jaw was somewhat restricted.

The fact that the inability to widely open the jaw, and that the peculiar contraction of the facial muscles continued as long as the diseased teeth remained in, and disappeared when they were removed, justifies the inference that the phenomena were due to reflex action of the motor branches of the fifth and seventh pair of nerves dependent upon irritation of the sensitive branch of the fifth pair.

AN ARTICULATING GUIDE, AND THE PROTRUSION OF THE LOWER JAW.

BY LONEDO FRAZEE, BROOKLYN, N. Y.

The annoyance and difficulty of obtaining a *perfect* articulation for a full upper and lower set of teeth, or even a single set, must be admitted by every practical dentist.

There has been no inconsiderable trouble and vexation of mind to secure a perfect articulation,—essential to a proper-fitting set of teeth. The great difficulty has been in producing a natural occlusion of the jaws. On biting into a piece of wax, the patient is quite prone to protrude the lower jaw to such an extent as to insure a misfit.

Some will close the jaws laterally as well as anteriorly, and distort the mouth to such an extent as to absolutely prevent the accomplishment of a natural articulation,—except after the usual way of trying in.

This old way is a source of much trouble and waste of time,—and surely time is money,—and requires a great deal of readjustment of the teeth.

By pressing firmly on the chin with the hand, as the patient bites into the wax, the inferior maxilla is prevented, to a certain extent, from being thrust forward, and the dentist is frequently enabled to make a set of teeth without the undesired work of readjustment. Still, this is not always safe. The depressor muscles of this bone are very strong, and sometimes it seems almost impossible, when the patient is closing the mouth, to hold the jaw back in its proper or relative position; and I have found it difficult, on several occasions, to obtain a correct occlusion of the maxillæ, even when I tried the teeth in, and would not discover the misfortune till the patient returned to get the set of teeth—all made and polished. Then the patient would *happen* to close the mouth naturally.

Nor are these exceptional cases, for we have presented to our notice such unseemly teeth almost every week in the year, by patients other

than ours. It is well known by dentists that persons who have had their teeth extracted, for any considerable length of time, acquire a habit of protruding the lower jaw, the muscles become somewhat relaxed, and the jaw seems, in fact, to retain no relative or permanent position. This is produced from a want of something firm for the jaws to close against. It may be called a sort of accidental malformation, for which it behooves the dentist to devise a remedy. First, the inferior maxilla must be brought back to its normal position in order to admit of contraction of the muscles,—the temporal especially. As this is difficult for the patient to do by muscular exertion, it will require some other assistance.

As mechanical appliances are not always feasible or admissible,—except in the case of an actual luxation of the jaw,—the correction should be performed through the medium of the teeth, which, after all, is the most practicable and agreeable. In the first place, a set of teeth should be made to fit the mouth, having a proper articulation. If the patient has been accustomed to great protrusion of the lower jaw, the new set of teeth will at first, consequently, extend anteriorly to the upper; but this need not be discouraging; if the patient is instructed to close the mouth, allowing the upper set to lap over the lower, there will be but little difficulty in acquiring the habit of closing the mouth in this manner, and in a little time the jaw will assume its original position.

The articulating guide which I set out to describe, is a contrivance which suggested itself to me some time ago, and is of no little importance.

It consists of a band that extends round the back of the neck, tapering to a narrow strap at each end, the whole more than long enough to reach round to the upper portion of the chin. Over the chin is a pad or cap made to fit its convexity, with a flap on each side, extending to or over the masseter muscles; at the front prominence of the pad is a double buckle or slide, through which the narrow straps pass, or there may be other fastenings.

To take the articulation, the wax is got in readiness, the guide adjusted, the patient opens the mouth as wide as possible, and the dentist draws the straps. This forces the mouth open. With the hand pressed on the pad, the patient closes the mouth; if it closes quite easily, the straps should be tightened a little more, and so on until the mouth is closed with some difficulty. As the patient closes the mouth into the wax, the left and right hands should hold the wax and steady the jaw as it closes.

The whole operation is performed in about two minutes. A support may be had by a piece over the head. This contrivance literally meets every requirement. It not only prevents protrusion of the lower jaw,

but also that lateral movement, as the jaw is held firmly in place. Myself and partner have used this with marked success, not finding it necessary to change the teeth after once set on the trial-plate,—excepting in two or three difficult cases We use the trial-plate to insure success, but have not found it absolutely necessary.

GALVANIC ACTION.

BY A. M. HILLS, CLEARFIELD, PA.

ALTHOUGH no two persons are constituted precisely alike, and that which produces a certain effect on one will produce a very different result on another, yet there are doubtless general laws which govern all actions of the animal organism. To appreciate and understand these laws is the difficulty. For instance, what will be the effect of two metals in one tooth? Cases come under my observation frequently where this state of things exists, but with very different testimony from the patients as to the effects,—some complaining of a persistent metallic or coppery taste, and uneasy sensations in the tooth, while others appreciate no effect whatever. Not long since a lady called to have an examination of her teeth. They had nearly all been filled,—some with gold, some with amalgam, some with both. In one tooth I found two large amalgam fillings and two smaller gold ones; no one of the fillings, however, in contact with another. They had all been in over twelve years, and the tooth was in a good state of preservation. This patient complained of a coppery taste in her mouth. Now, this was either the result of galvanic action, or caused by the secretions of the mouth acting on the amalgam fillings. If the latter hypothesis be correct, will not the digestive fluids be necessarily vitiated, and will not this ultimately impair the health?

But again. We see patients in the possession of excellent health whose teeth were filled with amalgam twenty years ago.

Can galvanic action be modified by temperament or condition? or is there any galvanic action where the two metals do not touch each other? or, if they do touch, will there be sufficient galvanic action in any case to produce unpleasant results?

My use of amalgam is limited to two classes of cases,—where the tooth is too poor in substance or vitality to warrant a gold filling, or where the patient is too poor to pay for gold.

Latterly I have been experimenting with Guillois's cement as a substitute for amalgam in teeth which are too frail to bear the mechanical force required to insert a gold filling, and so far am pleased with the results. Where there is much vitality in the tooth, its non-conducting properties make it more desirable than amalgam. In some special cases

which I have under observation, it has withstood the friction of mastication beyond my most sanguine expectations.

A single remark, in closing, upon these cases of galvanic action, of which we hear. I apprehend the unpleasant taste ascribed to this cause is not unfrequently chargeable to an unhealthy saliva and want of cleanliness, and that the *galvanic action* would cease if these conditions were corrected.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

British Journal of Dental Science.

Dr. S. James A. Salter, writing of "Casualties which may arise in the Operation of Tooth Extraction," gives the following case:

"*Crushing the Inferior Maxillary Nerve.*—I am surprised that this circumstance is not alluded to in text-books on dental surgery, as an occasional result of extracting wisdom teeth of the lower jaw. I have, however, never met with any description of it.

"Four instances have occurred in my own practice, and my relative, Mr. Bell, tells me that he has met with four.

"When we consider the close contiguity of the fangs of the lower molar teeth to the inferior maxillary nerve, especially those of the dens sapientiæ, it is remarkable rather than otherwise that such an accident is not more common, and still further so when it is remembered how often a deeply impacted tooth has to be dug for and prized out.

"The most severe example of this casualty with which I have met is recorded in my note-book as follows:

"'Baron T., a gentleman connected with the turf, about twenty-five years of age, had been under my care occasionally for some months, on account of tardy and painful wisdom tooth eruption, especially on the right side. In the early spring of 1865 he had been exposing himself to cold on Newmarket Heath, and had an attack of tonsillitis and inflammation of the fauces and velum palati. This condition of the soft parts very much exasperated the pain produced by the impacted right dens sapientiæ, and his brother brought him up to town distracted with pain, and insisting on the immediate removal of his tooth. This was no easy matter, as it was deeply imbedded behind and below the second molar, and I had the greatest difficulty in getting hold of it. However, with a pair of long-bladed hawk's-bill forceps, I at length grasped the tooth, and, with the exercise of much force, dislodged it. It had barely passed the patient's mouth when he sprang from the chair, and, placing both hands upon the right side of his mouth and chin, exclaimed, in the wildest excitement, "What *have* you done? what *have* you done? You've torn away my lip; my lip is gone." We tried to pacify him, and then, as we brought him to something like reason, he seemed bewildered, for he was able to feel his lip and chin with his fingers, though he could not feel his fingers with his lip and chin. It was quite clear what had occurred, and by degrees the

patient explained what he felt, or rather what he did not feel. All the teeth of the lower jaw on the right side were dead to sensation, and the whole area of the lip and chin, supplied by the mental nerve, was absolutely numb.'

"The extraction of the tooth was, in other respects, satisfactory, and the patient was quite relieved of the painful symptoms caused by the impaction; but the sentient paralysis caused him much alarm.

"About six weeks afterward the patient came to me, and at that time there was scarcely any return of sensation. Six months having elapsed, I again saw him: he could then feel when the skin of the lip and chin were touched; but it was not a natural sensation, being a feeling of 'formication,' or what is popularly called 'pins and needles.' From that time to the present he has been often under my hands, and I learn that sensation of the parts has never been completely re-established."

At a meeting of the Odontological Society of Great Britain, March 6, 1871, the rubber dam was spoken of with much favor by several of the members, and then Dr. Charles James Fox read a paper entitled "A Few Words on the Extraction of Teeth:"

"As amputation has been called the opprobrium of surgery, so, perhaps, extraction may be considered the opprobrium of dentistry—the last resource of the dentist's skill—in fact, a confession of failure; failure, notwithstanding all the resources of science, to preserve for use, during our brief span of life, one of those little organs, the retention of which is so essential to the comfort, if not to the duration, of that life. Whether it be from the feeling that extraction is such an opprobrium to us, or that from its frequent use or abuse by ignorant, unqualified men, it is deemed a practice unworthy of serious consideration by the learned and scientific followers of our profession, who consider their time more wisely and usefully employed in the study of the principles of conservative dentistry, I know not; but certain it is, that although this society has now existed fourteen years, we have never yet had a paper upon the very simple but all-important subject of the extraction of teeth. * * * *

"Until lately I had but little opportunity of comparing my practice with that of others, but the introduction of nitrous oxide brought to my rooms, before its use became so general, many brother practitioners, to whose patients I administered gas whilst they operated; and as one of the staff of the Dental Hospital of London I have frequent opportunities of witnessing the operations of some of the advanced students, whose dexterity and success I cannot but admire, although I frequently find their manipulation different to that which I should myself adopt. But I conclude that they are following the instructions of their other teachers, my colleagues, from whose expressions of opinion on this occasion I trust that, in common with others, I may benefit.

"Before going further I had better, perhaps, mention one or two rules which regulate my own method of practice.

"In the first place, I never in any case of extraction leave the right side of my patient, except in the case of removing the lower left wisdom tooth with the elevator; and often not then, simply turning the head of the patient sideways to the chair.

"Secondly, I commence to operate on every tooth as if it were sure to break, or likely to prove difficult of extraction; in other words, I adopt extreme measures at first, proceeding as slowly and cautiously as if I had to operate a second time after an accident, bearing in mind the remark made, I believe, by the late Durancé George, 'Better be a minute extracting a tooth than a second in breaking it.'

"A third rule is, never to 'pull out' a tooth—simply to 'remove it.'

"And a fourth, never to lose sight of a tooth from the moment the forceps are placed upon it until it is finally removed.

"A fifth valuable rule mentioned by Mr. Tomes is, 'Push the jaws of your forceps into the sockets as though you intended they should come out at the top of the head or under the chin.'

"But I say in addition, keep moving the tooth inward and outward all the time you are pushing home the instrument.

"Of course, I am well aware that there is no rule without an exception, but I think that those who have witnessed my operations will admit that the above is my almost invariable rule of practice. * * *

"In reference to my first rule, I would point to the almost invariable practice of removing lower left molars and bicuspids with hawk's-bill forceps from the left side. I confess that I can never reconcile myself to this mode of practice, although it is one of very old standing; it appears to me to result to a great extent in a direct *outward*, with very little *upward*, motion of the tooth, and consequent extreme strain upon the external wall of the alveolus; in fact, it seems to me very similar to the action of the key, minus the bruising or support to the alveolus rendered by the bolster. This is one of the questions I should like to hear discussed. It is true, as I said before, that in the hands of powerful, cool, and skillful young men, I have seen this operation performed with marvelous celerity, but I cannot divest myself of the impression that there must be greater suffering in the external wall of the alveolus than would result from a more gradual removal, substituting, it is true, a longer period of suffering *during* the extraction for the suffering *after* extraction. On the other hand, where this method of removing the lower molars has been adopted by less powerful and less skillful hands, fracture of the tooth has often been the inevitable result, and that so low down as to make the subsequent removal of the roots a matter of no little difficulty.

"Before the introduction of nitrous oxide, the instrument I here show you, one of American pattern, I used with complete success for the six lower molars, always standing on the right side of my patient. At first some little practice is required to attain the use of it, as it is necessary to turn the wrist well round to obtain the requisite mastery of the instrument. Mr. Vasey, some years ago, was so pleased with the principle of the instrument when I showed it to him that he at once had some lower root forceps made by Mr. Evrard on the same plan. You will see that whilst using this instrument my rule of never losing sight of the tooth you are extracting can be easily carried out. The presence of the prop when operating on a patient under the influence of nitrous oxide rendered the use of this instrument somewhat difficult, and in such cases I now invariably make use of a pair which were originally intended only for lower wisdoms, or, as a last resource, in the case of a broken-off crown, preferring, according to my second rule, especially with nitrous oxide, to adopt extreme measures from the first.

"I have said that one of my principles is never to 'pull out' a tooth, but simply to remove it; and I think I can safely say that I never broke a tooth without tracing the accident to a breach of this rule. It is not easy, when suddenly called upon before such an assembly as this, to detail your mode of operation—to define exactly *how* you do it; but I think I may define my manner of extracting, unscientific though it may sound, rather as a general shake of the whole tooth than as any definite determinate pressure in any one way. If I follow any rule at all, it is to press *inward* first, against the strongest wall of the alveolus, thus tending to separate the tooth from the weaker external wall, according to the advice given by Mr. Tomes. In the upper incisors I prefer to give half a turn each way, with a slight backward and forward motion; but whatever course of motion I give, I make sure that the tooth is well loose in its socket before I attempt to remove it. This is especially applicable to the upper teeth, and particularly to the case of a broken-down crown with the three roots still united. For such a case I prefer a pair of wide, long-jawed, upper root forceps, with a slightly movable joint, grasping the palatine and one of the buccal fangs. I push up all the time I am endeavoring to dislocate the tooth, carefully avoiding all traction, until the tooth is thoroughly loosened in its socket. In this way I have often succeeded in removing what have appeared to be hopelessly broken-down fangs. For such cases I have seen the forceps combined from various patterns by Mr. Baly, and shown at a recent meeting, used with great success.

"For the extraction of upper wisdom teeth I have never seen a pair of forceps so well curved for the purpose as these made by Evrard. When these teeth grow out much to the cheek, I have found it a good plan, directly I have introduced the forceps into the mouth, with one jaw of the instrument resting against the cheek, to tell the patients quickly to close the mouth; they cannot do this entirely, but yet do it sufficiently to cause that relaxation of the buccinator without which it would be difficult to get at the tooth. The upper bicuspids I have generally found prove to be the most fragile and deceptive of all the teeth we have to deal with; they are most frequently the subject of that little depression in the centre of the fangs, into which, as Mr. Vasey pointed out to me in the earlier days of my practice, a firm nodule of alveolus is fixed, acting with all the power of the small side-screw in a socket-handled instrument: all the pulling in the world will not get that tooth out until you have so far loosened it and enlarged its socket by various motions that the nodule can be fairly passed.

"The canines, too, are often subject to the same impediment, but I know no case that is more likely to balk a careless operator than the first upper bicuspid roots, when not fully divided by caries. I find it the best plan to remove the buccal fang, in such a case, with the elevator, and the lingual with the forceps; any attempt to remove them together will probably result in the collapse of both. The mention of the elevator brings me to the lower wisdom tooth, in which case I would only use it where I thought the forceps inadmissible, as, for instance, where much of the crown had disappeared or the position of the whole tooth was particularly eccentric.

"I am by no means a strong advocate for the use of this instrument, always preferring to use the forceps where possible, and not unfrequently dislodging a wisdom tooth with the elevator, and removing it

with a pair of root forceps, rather than have recourse to the repeated digs which I have sometimes seen administered.

"I know there are some who pride themselves on their dexterous use of the elevator, with which they say they can remove almost any root or tooth. It is very well to be able to do this in a case of emergency, but I am quite sure that the habitual pursuit of this practice is attended with much needless suffering to their patients. The method of using the elevator is another point upon which I hope to hear some expression of opinion. I believe that some use the outer edge of the alveolus as a fulcrum, and endeavor literally to dig up the offending root. I have always myself preferred to use a small, thin, spear-shaped instrument, and, letting it glide down close to the approximal surface of the tooth to be extracted, endeavor to insert it between that tooth and the septum which lies between it and its neighbor; by thus avoiding direct pressure on the second molar, and giving the instrument a half turn, the wisdom tooth is easily dislodged.

"I have not unfrequently been successful in removing a lower left wisdom by standing at the right side of the patient, and with a pair of lower bicuspid forceps grasping the tooth from the anterior external to the internal posterior corner. By this means I have been enabled, in cases where there was strong suspicion of the fang taking a direct backward turn, to give the tooth such a rotatory backward motion as to remove it with the greatest facility. With regard to the lower incisors, cuspids, and bicuspids, I invariably use the lower root forceps, still standing at the right side of my patient.

"I see that Taft, at page 345 of his 'Operative Dentistry,' advocates a very similar course. Indeed, in his 'general remarks' on the extraction of the teeth, he very strongly supports my views in favor of slow operations. He observes:

"'The movement in the extraction of a tooth should always be very deliberate—never sudden and violent. A very good criterion in regard to the rapidity of movement is, that the eye should follow and distinctly recognize every motion of the forceps, the tooth, and the contiguous parts.'

"And in another part he says:

"'The manner of performing the operation is an important consideration; it should not be precipitate or hurried. A very good criterion is, that the eye should critically follow and the mind attentively comprehend every movement of the hand and instrument. It is a very common method to seize the tooth, turn away or shut the eyes, and make the most rapid motions possible, regardless of consequences. Accidents, such as breaking the tooth, fracturing the alveolus, laceration of the soft parts, and rupture of the blood-vessels, are very likely to follow a hurried extraction; and there are many cases on record in which injury has resulted from a rapid application of force to the extraction of teeth.'

"There is much that is interesting and instructive on this subject to be found in his work, although he is not so clearly definite and concise in his instructions as Mr. Tomes, in his 'Dental Physiology and Surgery.'

"An interesting paragraph will be found at p. 329 of Taft, pointing out the peculiarities of certain teeth, as indicating the degree of facility with which they may be removed. This is a subject which might easily

be more fully worked out, and I would suggest it to some of our younger members as an interesting and practically useful field of investigation. One familiar instance occurs to my mind, viz., what are commonly called honeycombed first molars; the same causes which brought about the arrest of development of the enamel on the crown will be generally found to have caused an equal arrest of development in the fangs, thereby rendering them an easy prey to the forceps. There are other points treated of by Mr. Taft with which I do not agree, nor do I think that many will on this side of the Atlantic. For instance, his advocacy for free lancing of the gums prior to all cases of extraction. He says: 'In all cases the gum should be separated from the tooth as far as the embrace of the forceps is to extend.' This seems to me a needless addition to the discomfort, not to say pain, of our patients, and I shall hope to hear a definite expression of opinion on this subject to-night. Meanwhile I find the following pertinent observation upon this subject in a little manual on 'Extracting Teeth,' by Dr. Robertson, of Philadelphia, United States: 'It produces a great deal of unnecessary pain. With many patients the dread of having the gums lanced is greater than that of having the tooth extracted. Many timid and nervous patients can, by great effort, bring themselves to bear the infliction of one pain, but cannot a second. So it is no uncommon thing for such a one to submit to having a gum lanced, and then go away without having the tooth extracted, but who would gladly have had it out if it could have been done at once, *as it should have been.*' The writer concludes: 'Have a gum-lancet, then; let it be a good, plain, practical instrument, but use it seldom.'"

Canada Journal of Dental Science.

Dr. J. H. Webster reports "A Case of Hemorrhage:"

"A number of years ago a patient of mine called in to see me, bleeding from the gums, having been treated without avail for three days by his physician, who could not stop the hemorrhage. The blood oozed out slowly from around the neck of a *perfectly sound tooth,* which was neither decayed nor diseased. This was peculiar, and to me, a novel case. The gentleman was so weak that he could hardly stand. He came to me as a last resort, thinking as it was from the gums that it might be within my scope to stop the bleeding. I suggested as the only possible remedy the *extraction of the tooth,* and afterward plugging the socket; but I refused to do it unless his physician was present, as the condition he was then in did not seem to justify me in assuming any extra risk without the presence of his medical attendant.

"The next day he returned alone, not being able to get his physician. He had made every arrangement to die; the bleeding had continued all night. The physician advised him to submit to my proposal, and he decided to do so. I concluded to take the risk rather than let him perish, and I must say that never in my practice did I feel so great a dread of consequences as on that occasion.

"I extracted the tooth,—a molar,—and the blood spurted out in jets ominously. I immediately plugged tannin and gold foil into the socket,—the best things I had at hand; in ten minutes a clot was formed, and the bleeding had ceased. The blood evidently was arterial. I hardly know how to account for the spontaneous hemorrhage. I question if any other means than those I adopted would have saved this gentleman's life."

X. Y. Z. gives the following plan of "Treating Discolored Teeth:"

"I have tried many things for bleaching discolored teeth; have succeeded with some; failed with mostly all. Some are too caustic, others too easily deliquesced, and their normal effects neutralized.

"In all cases of discoloration which I can have under my control, I thoroughly remove every particle of decay, dead pulp, etc., and take chloride of lime 1 part, oxychloride of zinc 1 part, mix as usual with the fluid of the latter, and fill the cavity, renewing several times in the course of a month. The chloride of lime must be fresh and have been kept close corked. I was indebted to a friend a long time ago for this simple method of treatment. It has served my purpose very nicely several times."

Missouri Dental Journal.

Dr. Chase, writing to students and young practitioners, gives the following instructions for "Treatment of Exposed Pulps:"

"If a pulp is exposed in the process of excavating, it should not be destroyed, but efforts made to preserve it alive. To this end, touch it with a pellet of cotton wet in creasote. Then remove all the decay within the cavity that it is possible to without further wounding the pulp. It is better to leave a little softened dentine over the pulp rather than to run much risk of wounding that organ again.

"A broad and very sharp excavator should be used when working over the pulp, as it is not so likely to cut through and wound it as a smaller blade. Prepare the cavity very nearly or exactly as you wish it to remain when the tooth is permanently plugged. This must be determined by circumstances.

"The cavity should now be plugged with *oxychloride of zinc* or *osteoplastic*.

"To do this, turn out on a piece of glass or porcelain enough of the liquid to fill the cavity, then drop into it enough of the powder to absorb the liquid. While it is in this soft batter state, and before it begins to harden, put a portion into the cavity, pressing it home, gently, with a bit of spunk. The spunk will also absorb the surplus liquid. The operation may be repeated until the cavity is full. The tooth should be perfectly protected from saliva during the insertion of the filling, and also during its hardening. After it is filled, and before getting wet, the surface of the plug should be smoothed and then coated with sandarac varnish. After allowing the latter to dry a moment, the mouth may be shut, and the varnish on the plug will protect the latter from moisture, and the oxychloride will harden nicely. If it is convenient to do so, this plug should remain in the tooth a year. If it is on an approximal surface, it will probably wear that length of time; but if on a grinding surface, it will need to be mended, by adding more material to it after a few months. In some cases the pulp will die, thus treated; but in a great majority of cases it will live in a healthy condition. Sometimes it will live for months in a *dying* condition. The object of deferring plugging the tooth with gold is obvious enough. We wish to be pretty sure of its continued health before putting in a permanent plug.

"Very likely there will be considerable pain when the osteo is first inserted, for a half-hour, or even for a half-day.

"The less pain, the more favorable the prognosis. If the pain should

continue several days, growing less and less, you must not suppose the tooth is out of danger; for really it may be in a more dangerous condition than at any time previous. *The pulp may have died.*

"You must find out whether this is so or not. Throw a small stream of cold water on the tooth from a syringe, and if it is alive, pain will be felt. If the pulp is dead, there will be no response. If the pulp *is* dead, it must be removed from the crown and *roots* of the tooth; otherwise periostitis and suppuration will probably follow, resulting in alveolar abscess.

"If the pulp continues healthy for several months, there will probably be new dentos* formed between the plastic plug and the pulp.

"When it is decided to plug the tooth with gold, it is better to leave some of this oxychloride of zinc over the pulp, and in such other parts of the cavity as may be deemed desirable; never, however, allowing this material to come to the edge of the cavity. This plastic filling, when well put in, is often found to be as hard as the tooth *within* the cavity, and I occasionally leave a considerable portion of it in the tooth, and sometimes make retaining-points in its substance.

"When we have a case of exposed and inflamed pulp, the treatment must be different.

"If there has been repeated inflammation of the organ for months, there will have to be considerable treatment for its restoration to health before it should be plugged with *anything*. The inflammation must be reduced by using aconite tincture and creasote. If portions of the pulp have sloughed, it will be better to destroy the remainder with arsenic, and remove it entirely, when the roots should be plugged."

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

The eleventh annual session of the American Dental Association was held in the Methodist Church, at Greenbrier, White Sulphur Springs, West Va., commencing on Tuesday, August 1st, 1871.

Soon after 10 o'clock the meeting was called to order by the President, Dr. W. H. Morgan, of Nashville, Tenn.

The roll of qualified members was called, and the reading of the minutes of the preceding meeting was, on motion of Dr. G. H. Cushing, dispensed with.

The reports of standing committees were then called for, but, on motion of Dr. Crouse, the regular order was suspended in order to attend to some preliminary business. The hours of meeting were fixed for 10 A.M. and 3.30 P.M.

Inquiry being made in reference to clinics, the Committee of Arrangements reported that it would be difficult to hold clinics, as there were no operating-chairs in the place.

* Dentos—Tooth-bone.

Dr. Taft thought it not best to occupy valuable time in clinics. There will be none too much time to hear and consider the reports and other important topics, which ought long since to have been considered. The association could not afford to fritter away its time in manipulative exercises, which can be carried on in local societies. The influences of this body should extend all over the country, and further, if possible. No clinics or exhibitions should be allowed during the hours for meeting.

It was finally decided that the clinics should be held from 8 to 10 A.M. The President gave notice that he should call to order punctually.

The regular order was then returned to, viz., the reading and consideration of reports of standing committees in consecutive order.

Dr. Cushing moved that Drs. Salmon and Morrison be, at their own request, discharged from service on the Committee on Instruments and Appliances, both having appliances of their own.

Carried.

Adjourned.

First Day—Afternoon Session.

After reading of the minutes, the Committee on Credentials asked for further time, which was granted. A partial report was, however, made.

The Committee on Dental Physiology was then called, and Prof. Judd, Chairman, submitted a report, of which the following is the substance :

Physiology is that branch of learning which treats of the phenomena of life. We say phenomena, because we know little of the essence of life; all speculations being too vague for our present purpose. Though physiology is the science of life, we most frequently mean by the word to include only function, without touching the question of life in the abstract. If, in this sense, we confine ourselves to a dental physiology, we have only to consider what is known in reference to the functions of the dental organs, which alone would present many fields for investigation. Whoever attempts to elucidate new principles in this field must first make himself master of the physiological literature of the day, or waste his time in experimenting on predetermined facts. If we would study successfully the laws of life, we should direct attention to those conditions where its essential phenomena are exhibited in their simplest form, thus separating surroundings which might obstruct our view. Should we make our observations on the highest organized structures alone, we might conclude that an intelligent activity was an essential element of life; but if we go to the other end of the scale, we shall not make such a mistake. Life in the monad is as unmistakable as in the man. Nor is the vegetable world more simple. The veriest point of protoplasm exhibits all the essential characteristics of living beings.

Matter in its relation to life may be considered in four different forms.

Heretofore only three have been recognized, living, non-living, and dead, but we include one more, viz., viable, and the category is complete. By viable matter we mean that which possesses only the potentialities of life; by living, that which possesses the activities; by non-living, that which is endowed with neither the activities nor potentialities of life; and by dead, that which has once lived but has ceased to manifest the activities, and no longer possesses the potentialities. There is a limit to our investigations which it were folly for man to attempt to pass. While the activities of life result from secondary causes, which may, and probably will, be understood, the philosophy of the potentialities is no more to be found out by scientists than that of chemical affinities, which would, if understood, involve a complete comprehension of Omnipotence. The potentiality of viable matter is vital, of non-viable,—as cohesion,—is non-vital. What answer can we give to the question, Why does a cell possess the power of transforming the vital forces? and how is it that in this change common affinities are kept at bay? None, but to say that organic matter is the appointed medium of these changes. Such questions are beyond the scope of human intellect. When it is understood that different results obtained by the action of the same substances on living or non-living matter are determined by the different potentialities, the controversy as to the identity of forces will cease. We have no need to press into service unknown forces to account for the growth and development of a cell. The power of division is manifested when the mass (of cells) reaches a certain size. This power is the only essential process in the multiplication of living beings. But although chemical investigations have led to astonishing results, nothing like an approach to the solution of the grand mystery of life has been achieved. Though man has read the storied pages of the world's primeval history, has discovered the laws of the evolution of central suns and planetary systems; though he has measured the depths of space and weighed its mighty orbs and determined the elements of which they are composed; though he has tamed the lightnings and made them his willing messengers, and thus annihilated time and space; yet, though every succeeding year may add to his knowledge, still the production of the simplest cell, with its powers of assimilation and division, will still be as far beyond his power as it is at present.

A word in relation to the innovation we have made by considering matter in four conditions may make evident the necessity for this new category. A seed entombed for thirty centuries with Egyptian mummies is still capable of germination; we state that during this period it has been *viable;* we do not assert that it is either dead or living, but that it is capable of life under favorable circumstances. But, like dead matter, it must once have lived and ceased to exhibit

the activities of life. We have, therefore, assigned it a special place in our category. The existence of a vital force, distinct from the physical, has never been demonstrated. The apparent necessity for such a distinction will disappear if we consider that different modes of motion are not different forces, but different manifestations of one force. Connect a piece of soft iron with the wires of a battery, the iron becomes a powerful magnet, though the connection made with other substances will produce no such results. The difference is owing to the different potentialities of the iron and the other substances. We have stated that the power of division and that of assimilation are the only distinct processes in the multiplication of beings. Though different methods of multiplication have been designated, as by division, by endogenous growth, by a process of budding, or the pinching-off process, as it is termed, yet, if we observe these processes clearly, we shall find that they are essentially the same, simply divisions of the germinal mass. We do not refer to the antiquated doctrine of the formation of cells in a formative fluid. We are interested only in living issues. We have confined ourselves to these few points, believing that the light shed upon them recently by the world's great luminaries warrants a modification of previous views.

Other papers on this subject being called for, Dr. Taft said that though it was the custom in local societies to read voluntary papers on any subject, yet such was not the case in this body.

Discussion upon this subject being in order,

Dr. Atkinson said, regretting that he was not present when the first part of that report was read, he congratulated this body that a subject of this importance can be considered without that humdrum routinism which has borne down the medical profession. If he were disposed to speak with the mind of a critic, he might say that this is not a report on physiology but upon biology, which is the basis of life. We are inspirationally after truth. The present difficulty is the everlasting stickling for terms. He desired to get at the concept of the speaker, whether he was moved by his own inspiration or that of others. Matter has here been discussed in four forms. This is a new doctrine, but none the less truthful. The physicist must invade the field of consciousness, and know that he *can* think before he will know how to think. We have assumed a miserable duality instead of a glorious unity; have divided matter and spirit, groping our way in darkness and despair, crying out that we shall never be able to know the truth. Knowing the beginnings, we will know the relations of things. You talk of a primal cell, and you don't know what a cell is. It ought to be spelled s-e-ll. Physiology means function, and that means organ. There is nothing that is non-living. Death itself is nothing but change. Everything comes under the law of homogeneous heterogenity and heterogen-

ous homogenity that pervades the universe. Going back to the beginning, I do not want to call these germs *cells*, but bodies. There are two ways of cognizing things,—by the senses and by the sentiency. All that comes in at the senses is physical; that which is cognized by the intellect (sentiency) is immaterial. We come here to work on principles, on which our practice is based.

Dr. Taft offered a resolution inviting certain gentlemen, dentists and others, not members, to participate in the discussions, which, after considerable discussion, was adopted.

Dr. Howe, of Cincinnati, said attention has been called to the confusion of terms in scientific discussions. Facts and truths are used as synonymous terms. Fact, however, is material; truth is revealed. There is an opposite to truth, but none to fact. Truth is found in revelation, and scientists will never be able to shake God's truth. Fact is matter in motion,—put in motion by spirit.

Prof. Judd desired to make an explanation. Dr. Atkinson believes that there is no essential difference between the crystal and the man, so far as vitality is concerned. I claim that vital actions are exhibited by living beings, and we call them vital because exhibited by living beings alone. When we say matter is dead, it is the language we have agreed to use when it fails to exhibit the phenomena of life. These are due to something which operates through dead matter. To understand this is beyond our comprehension. If Dr. Atkinson says that in the future we shall understand it, he can bring nothing forward to prove it. The word body I consider better than cell; but this word has been engrafted into our literature. Men know nothing about the growth of language; words apparently essential to the Latin tongue, and used by Cicero himself, have died out. Many words so change their signification as to mean exactly the opposite of what they once did. The French Academy attempted once to change certain words and substitute others, but found it utterly useless.

Dr. Atkinson. All that has been said has but proved true the inability of words to convey concepts. I will discuss philology in its proper place. I want to get men out of the place where I once was. Physiology is function,—that is, work of a body,—no matter whether we include it in the skin of a word or not. The concept of a cell boggles physiologists. Here is this great skin of ours, with its pabulum coursing within it; that is a big cell itself. The feeding,—that is physiology. Until the microscope was discovered we had not the concept of life. Hitherto shalt thou come and no further, was written over the doors of physiology; but the glorious light of the Father above came streaming down through constructive lenses, and multiplied our conceptive powers. Anything that conspires to support functional activity is the basis of physiological action; anything that don't do this, arrests

physiological action. It either supports or kills. Will Prof. Judd tell me what "killed" means?

Dr. Judd. Loss of its potentiality.

Dr. Atkinson. What do you mean by *its?*

Prof. Judd. Matter that has not only ceased to exhibit the actualities of life, but which has lost its potentialities.

Dr. Atkinson. We might spend a whole night in discussing whether a body frozen is dead or alive. If thawed slowly it resumes its functions, but if rapidly it becomes dead.

We have not yet risen to the conception that matter must be living to be at all. When patients come into our offices we assume wisdom, and say we understand it all; but until we do understand physiology we shall never understand its difficulties. Plasma is chaos. Physiology is the taking in of plasmatic mass that feeds the bodies. Vitality is simply manifestation. We don't know what life or death is; it is change of habitat, of ghost. The law of togetherness and apartness is the most primal concept of life. Hence a crystal belongs as legitimately to the sphere of life as the seraph that blazes before the throne. The enamel of the dentine is the only substance that cannot be reproduced. All the rest may be. I know that bone and nerves may be reproduced; this can be demonstrated to stone-fence minds. The tissues can be supplanted, as in the case of tuberculosis, where soft bodies are generated, taking the place of those by substitution. The case of Prof. Day, of Yale College, who was a pronounced consumptive at fifteen, illustrates this. He died at ninety-five, a few years since, having fallen in with a man who clearly saw that the pabulum must be supplied on which the tissues might feed. The tuberculosis became partly encysted and partly expelled, and the man recovered, when at thirty-five he was thought to be a hopeless case.

We have got to rise to a concept of the great truth that in God we live and move and have our being. Truth is revealed to us, and we must dispense it so that we may not look for things with the oblique rays that are only to be found out by the direct rays. When a thing is thus revealed, we can speak with the certitude of the pillar of the throne of God. A crystal *does* think about what it is necessary to take in to perpetuate its own existence. Here we have the key to the whole.

Prof. Judd. In relation to the whole matter, I would say that when Dr. Atkinson comes down to the facts, and I have seldom to call him to account as to facts, we do not disagree; but his inspirations and those of others lead in so many different directions that I distrust them. I think there are times when a man sees things he cannot at other times; when he can speak as he could not at others; I will concede so much to his inspirations. I am not sure that we differ at all as to the facts in physiology. But when he comes to the upper strata, then I

must leave him, and he ought not to quarrel with us if we don't believe in all his inspirations.

Dr. Atkinson. When our minds and affections are married we will not quarrel. We must integrate into our lives what the great Master taught, "He that will save his life shall lose it." If there is not a divinity in physiology, it is pathology.

The Chair announced the following appointments to fill vacancies on the various committees:

Dental Physiology.—Drs. R. Huey, of Philadelphia; and I. F. Thompson, of Virginia.

Chemistry.—Drs. H. A. Smith, of Cincinnati; and Webb and McDonneld, of Pennsylvania.

Operative Dentistry.—Drs. J. Taft, Cincinnati; W. Dutch, California; and C. D. Cook, New York.

Mechanical Dentistry.—Drs. W. N. Morrison, St. Louis; J. R. Walker, New Orleans; and E. Floyd, of North Carolina.

Dental Education.—Drs. Francis, New York; Noble, of Washington; and F. Hickman, of Pennsylvania.

Histology.—Profs. Judd and McQuillen.

Dental Therapeutics.—Drs. Atkinson, New York; J. J. Birge, of California; and G. W. Keely, of Ohio.

Instruments and Appliances.—Drs. J. F. Canine, Louisville; and Walker, of New Orleans.

Prize Essays.—Drs. Crouse, Chicago; J. I. Taylor, Cincinnati; and I. A. Salmon, Boston.

Dr. Taft suggested that though these committees could not be expected to prepare elaborate reports, yet they might touch upon a few points, so that definite action upon them might be taken.

Adjourned.

Second Day—Morning Session.

Called to order at ten o'clock. Minutes read and approved.

The subject of "Dental Physiology" being declared still open—

Dr. Taft said he hoped this discussion would not be cut short. He was pleased with the report, yet it seemed scarcely to cover the ground which a report on that subject should cover. Physiology is the science of the functions of living bodies; the report and discussions had had reference to histology—the development of organs. This is an interesting study, but not now under consideration. The manifestations of function are modified by circumstances. All organic tissues do not present the same phases. There are deviations from the normal standard. No two organs are in all respects just alike; there is just as much variety as in the faces of individuals. They have many things in common, but each has individuality. Histology is closely linked with physiology, but the examination of the different organs,

their susceptibilities and liabilities, and their influence upon each other, is an important point for our consideration.

Prof. Rufus K. Browne being introduced, said that he would rather speak before this body than one of his own profession. You alone of all who are advanced and advancing, listen with receptive minds. The medical profession, though its backbone has been repeatedly broken, listens with no receptivity. The literature of physiology represents no truth. He finds in that literature one statement alone which represents truth,—that in reference to the circulation of the blood, set forth by Harvey. When he began his researches he did not doubt but that the books contained truth; but eleven years of study, day in and day out, had convinced him that they were a mass of error. Study means, not reading words in a book, but observation of function in the body,—the tissue should be studied, not the book. The bane of the profession is, that the phrases of books are accounted knowledge. They had better be discarded than leaned upon any longer. The ordinary reader can not pick out the few facts from the thousand errors. Words have no meaning but in the minds of men. The same words which Huxley uses to express the grossest error I can use to express my own convictions of truth,—for instance, the change of color in the blood. The phrase, as used, represents no truth. What constitutes this change? Physiologists have said that there were two changes; there are no two changes; blood has no color apart from the red globules; they take oxygen into the body, and this produces a change of color. After coursing through the vessels, the blood returns to its normal purple condition; this is called by physiologists another change. The fluids of the blood take no oxygen, the solids only do that; they take up a definite amount, just as is done in the formation of chemical compounds; in doing this the change of color takes place; carbonic acid has no influence in making it blue, though Flint and Dalton will so assert to-day, as they have done for years. The moment the oxygen leaves the globule, it leaves it its permanent purple color; carbonic acid does not touch it. The ruling truth is to see that these globules are what they are, and this truth will one day supplant all error. Will the medical profession aid? Not much. The greatest so-called discoverers are no discoverers; they have literally not the first idea; the new microscopy will differ from the old as truth from error. The relation of oxygen to cells is that of departure and supply.

Dr. Atkinson. We suppose that we are prepared to differentiate between truth and error, in which case we must know more than the authors of the books themselves. Facts are the external manifestations of truth.

Prof. McQuillen had noticed with pleasure the enthusiasm manifested by this body when advised to study nature. How many of you will do so? If all that is embodied in works on physiology is as naught,

if the labors of men who have been justly regarded as master-minds have only resulted in the accumulation of a mass of error, how dark the past! how unpropitious, how hopeless, the future! If the efforts of the past have been barren in their results, how can we expect anything better of the future? Shall we look with contempt on the teachings of the kind mother who starts us on the road to knowledge, because, perchance, one day we may know more than she did? She did her best. Liebig says, "Show me the man who makes no mistakes, and I will show you a man who has done nothing." The fear of making mistakes frequently deters observation and expression of opinion. If he would urge anything on the profession, it would be that its members should make themselves familiar with books and then go to nature. He could not agree with the idea that books should be thrown aside as useless. He does not recognize that any one has taught that oxygen is carried directly to the tissues by the red corpuscles; nutrition is extravascular.

Prof. Browne. The red corpuscles do not carry oxygen, but yield it to the fluid which carries it. Oxygen nutrifies nothing; substance nutrifies.

Prof. McQuillen repeated that the red corpuscles do not pass out of the capillaries, though in some cases the white corpuscles are said by some observers to do so. Did I understand Prof. Browne to state that no carbonic acid is formed in the tissues?

Prof. Browne. No union of carbon and oxygen takes place in the body. When you state that red corpuscles carry oxygen, you state what the books say, and it is contrary to truth.

Prof. McQuillen. Assertion that fact is fact does not make it so. Men of science demand proof. To deny that there is a union of oxygen and carbon taking place in the body demands more than assertion. Chemists tell us that this does occur. That carbonic acid is present in the venous blood and in the pulmonary exhalations is easily demonstrated. Where does it come from if not from this union? We must consider the conditions. In the dark, certain elements remain in close proximity, without union, for an indefinite period; but let a ray of light enter and they unite with explosive energy. Carbon is found without color in the diamond; in charcoal and graphite it is black as night. Chemically there is little difference in these substances, although so dissimilar in appearance; is it not, then, reasonable to infer that carbonic acid *may* impart color to the blood? Some minds are easily dominated, saying "Yes, yes," to-day, to one man, and "No, no," to another to-morrow, on the same subject. He would impress upon the minds of those present that they should read books but should not be bound down by them; they should respect the efforts of the brilliant minds of the past, and not consider them as ignoramuses, and their works as containing no truths.

Dr. Harriman. It is our duty to respect brilliant minds, but we must cull over their works. They may have been correct in their day, but science is not stationary. I have assisted Prof. B. in demonstrating these facts. He speaks from experience. He has worked hard, and none appreciate it. His book, when it appears, will be a new dispensation. What does a chemist know about living matter? As soon as he examines it he kills it; it is dead; it is something else. He respects chemistry, but has seen the falsity of many of its teachings as plainly as he sees the President in the chair. The microscope has now been so far improved that the testimony of the fathers is almost set aside.

Prof. McQuillen. The gentleman informs us that he has had peculiar advantages for investigation. I dislike to speak of myself, but would say I have for weeks, from early in the morning till late at night, experimented on this matter of the blood with dogs, cats, rabbits, etc., and do not wish to be understood as speaking from books. These experiments have been republished in the leading medical and microscopical journals of America, England, and Germany. I respect truth whether from a sage or from an ignoramus, and will take exceptions to error emanating from whom it may. Truth will live, and what is the use of foisting in a miserable individuality?

Dr. Atkinson. He who asserts is bound to prove; truth is not negative.

Prof. Judd. That principle is correct, but not always recognized. As to the fact of the circulation of the blood being the only truth in physiology,—we are acquainted with the views which have been advanced by Prof. Browne through articles in the journals; but we believe there are other facts beside that one. Does the gentleman mean to assert that the stomach is not a digestive organ, or that the kidneys do not secrete urine? While we recognize his efforts, we know that he is not the only man who has spent his life in the pursuit of science. There is an acquired significance in words, but no inherent significance. As to change of color in the blood. That question has been discussed. The gentleman was understood to say that there was but one change of color. There is an admitted change from purple to scarlet. Now, if there is no second change, how does it become purple again? If it is changed, there is a change back again. We are aware that the medical profession has not appreciated the work of investigators; it is the fault of that profession. But there is a growing disposition to admit proof, and when the gentleman's views are proven he will receive credit for all the innovations he has made. The next gentleman indorsed these views with the whole weight of his authority. These errors a longer life will sometimes correct. There are two ways of looking at these things. There are two parties; one is conscious of knowledge that they cannot impart. I am conscious of my own existence, but cannot demonstrate it objectively.

Dr. Harriman. The stomach does not digest the food, it only contains it. The gastric juices assisted by the saliva digest it. As to the white blood corpuscles passing through the walls of the vessels, he has never seen it, but perhaps the previous speaker has. Cells produce cells; he knows that, for he has seen it, as others of you doubtless have.

Dr. Thomas, of Detroit. The questions which have arisen are of great importance; but there are practical questions of more interest. Though he is not a student, yet he has accepted the theories of men whom he sees around him, and is humiliated to hear that no truth is contained in them. The publication of the work referred to would be the proper mode of presenting these views.

The subject was then passed.

The report of the Committee on Dental Pathology was then called for, and Dr. Atkinson, Chairman, read a report, of which the following is a very brief synopsis:

It was stated that two questions must be definitely answered before any test basis can be reached: first, what is pathology? and second, what is surgery? We cannot say affirmatively, in honesty, that any such basis has been reached. We have, however, learned much that is affirmative. The habits of dogs of the chase were spoken of. They endure fatigue without food for days; they refuse food for a time after their return, and eat voraciously subsequently. This is an example of a stage of physiological rest to tissues to fit them for normal work, and this principle has not been sufficiently heeded by physicians and surgeons. The best treatment of surgical cases in fat subjects is to imitate hybernation, and institute forced physiological rest. Supply of nutriment must be fluid, or carried by a fluid to the tissues. Physiology is normal function, pathology divergent function. It has been hinted that it is impudence to question the authority of books and teachers in our institutions. It is rather the veriest malpractice to follow directions not understood and principles not comprehended. The most advanced are but abecedarians. What, then, shall be said of those who cannot discern the alphabet? Study *things*, not books; or if not the thing, its nearest representative, as—1st, its bust; 2d, its portrait; 3d, its description; and 4th, its name. Surgery is the means made use of to restore lesion of tissues; it is either conservative or reparative; the former attempts to limit pathological action; the latter, to restore lost parts.

Cells are endowed with an inner portion of protoplasm, called a nucleus, which receives and disposes of the pabulum of the body as the stomach does for the animal. Any disturbing influence to this action produces pain or disease. The perception of this may be central or local; mind and function are interdependent. Man need not look beyond himself for an acquaintance with the laws which govern his genesis, fruitage, and dispersion in the ocean of force and form, from which

were formed the earth and all its inhabitants; so when we have all knowledge pertaining to the least individuality, we shall be able to fulfill our career without arrest. The beginning or ending of individualities will be indifferent, as to first or last. The cosmos is a plenum, and must consist of two-ness and not one-ness. Spontaneous origin of tissues is unwillingly acknowledged by the advocates of the "germ" theory. To understand the problem of individual career we must analyze the department of consciousness. We must observe the inception, ripening, fruitage, and dispersion of a single body or process throughout its serial metamorphosis. Thermal changes are motions of molecules. Could we control these (in the body) at will, we should have nutrient activity in our power. Extremes of this condition alike kill the molecules. When the change has not been too great, we restore by a gradual application of heat or cold, and where coagulation has taken place we have recourse to surgical manipulations.

No marked advance has taken place within the year in pathology and surgery. The usefulness of the method of treatment of necrosed bone by the use of sulphuric acid has been more fully established. Two new remedies have been brought into use, viz., thymol, as a substitute for creasote, and the mono-chloro-acetic acid, both of which have been imported only a short time. I have tried them, and recommend them to you as invaluable.

Adjourned.

Second Day—Afternoon Session.

Called to order at half-past three o'clock. The Secretary being absent, Dr. C. S. Smith was appointed Secretary *pro tem.*

Prof. McQuillen objected to the resolution adopted yesterday, inviting certain dentists to participate in the discussion, as it was in violation of the constitution and the objects of the association. A reconsideration of the vote by which the resolution was adopted was moved and passed, and the resolution amended so as simply to invite all persons to seats on the floor without participating in the discussions.

"Dental Pathology" being still in order, Dr. Atkinson explained further the new remedy referred to in the report,—thymol. He said it was related to the phénol and carbol. series. The objection urged against the smell of creasote does not apply to this. It is rather pleasant.

Dr. Crouse called the speaker to order, on the ground that he was speaking on therapeutics, not pathology. The Chair sustained the point of order.

Dr. Atkinson appealed, and the appeal being sustained,

Dr. Atkinson said some men have to have the grace of God beaten into them with a mallet. Thymol is pleasant to patients, especially homœopathists, who abhor creasote. It was obtained from Darmstadt, in Germany. I have liked it from the first. It is not fluid at ordinary temperatures, but a glycerole has been prepared which retains its

fluidity. I have introduced it and indorsed it fully. It is very fine for ulcerous patches in the mouth. It is a disinfectant.

Prof. McQuillen asked if Dr. Atkinson said that pestilence existed in Persia on account of the absence of scientific knowledge.

Dr. Atkinson. Yes.

Prof. McQuillen said that we are apt to forget our obligations to the East, not only for systems of religion, but also for the development of science, and especially of medicine.

Dr. Atkinson. I said that it was an opportunity to repay the debt we owe those countries, which were formerly lands of religion and science.

Dr. Walker said that he had intended to prepare a report upon the disease produced by rubber, but had not done so. He hoped, however, that the subject would be thoroughly handled. It is well established that the membrane of the mouth is five times as sensitive as any other. The observations of those who do observe carefully establish that this is one of the greatest scourges, and should be discussed thoroughly, and every effort made to get rid of it.

The subject of "Dental Pathology" was then passed.

The Committee on Histology were called, and asked for further time. Granted.

The Committee on Volunteer Essays presented a paper by Dr. G. W. Harriman, of Boston, which was then read by the author.

The paper opened by asserting that the dentist of the present day must be thoroughly versed in a knowledge of the human frame, and a worker and student in library and laboratory. The variation in the normal number of teeth between the mammalia and other branches of the animal kingdom was noticed. The constituents of the teeth were named,—all the dentinal tissues receiving their due supply of lime-salts from the proper sources. There is no such thing as enamel pulp as stated in the books. Enamel is formed by the calcification of the fibres. Prior to calcification, the tissues forming the dentine are a homogeneous mass of fibres and cells. The essayist then took issue with Prof. McQuillen in respect to his views as to the contents of the dentinal tubuli; the latter, as was stated, denying the existence of nerve fibrils in the tubes. In contravention of this doctrine the essayist said, first, that the amount of fibrin in the blood (2 pts. in 1000) was not sufficient, if coagulated, to produce the appearances presented; second, that fibrin will not coagulate when separated from the red corpuscles. After announcing his total want of agreement with authors and investigators, the essayist attacked the commonly-accepted theories of the development of the teeth as established by Goodsir, which show that the primitive dental groove, and the germs of the teeth, may be discerned about the sixth week of fœtal existence, asserting that he could discover no osseous deposit in the jaw before the twelfth week, nor any

signs of the teeth prior to the seventh month. The essayist scouted the idea that any appendage to a tooth has connected with it anything resembling prisms, pillars, or tubes, hollow columns, tubuli, or hard pipes, as generally described in dental works. The tubuli are nothing but cell fibres, branching away from the pulp and terminating at the enamel, and the fact that they are not tubes was said to be established by the impossibility of injecting them with carmine. The paper closed with a reiterated attack upon authorities in general.

Prof. McQuillen said, after the reading of the paper, the ground traveled over obviated the necessity of any report on histology. He may have said positively that dentinal fibrils are coagulated fibrin, but it was not his habit to state things in that manner. He was generally in the habit of offering his views suggestively. He was not as yet convinced that the fibrillæ are nerve fibres. The microscopical appearance of a tooth differs according to whether it is fresh or dry. In the dry tooth there are certainly tubes or tubuli which had been occupied by the soft-solid fibrillæ. The paper said that fibrils existed in the tubes six months after extraction. I ask whether the tooth had been manipulated with chemicals?

Dr. Harriman. Yes.

Prof. McQuillen. Then the dentine was in an altered condition. In making a microscopical examination of a tooth, or any other organized structure, to determine the peculiar characteristics, it should be subjected to as little change of composition as possible. It was stated in the paper that the author had not found teeth germs at any time before the seventh month of uterine existence. Now, it is a historical fact that a king of France, Louis XVI., was born with erupted teeth; cases of this kind are of quite frequent occurrence; this, then, would allow but two months for the processes of tooth formation and eruption. Prof. Judd took some exceptions to the propriety of applying the term exostosis to the enlargement of cementum. He had preparations with him, previously submitted to the Academy of Natural Sciences, in which the difference in bone, dentine, and cementum was apparent,—the bone showing the Haversian canals, canaliculi, and lacunæ; in hypertrophied cementum the Haversian canals are not found. A man accustomed to the use of the microscope can readily distinguish between hypertrophied cementum and bone. As to nerve fibrils in the tubuli, he must see them to be convinced,—it was his practice to follow assertions with demonstration. He wanted to see not only the nerve fibres, but the nerve cells, that had been described and figured in an article published in the Dental Cosmos.

Dr. Atkinson. There is evidently a boggle about the concept of truth. Exceptions may be taken to the paper in a number of its parts. The gentleman, though a faithful worker, shows a want of range of observation. Bone, enamel, and cement have different characteris-

tics. How shall we recognize them? This depends on the locality of the bone. A single stratum might contain no Haversian canals; but if you have enough to say that it is bone, you have a Haversian system. This system is a portion of cartilage that has been converted into bone. If the uncalcified tracts are large enough, they have blood-vessels running through them. Cement is the medium of communication of pronouncements of force and form. The give-and-take movement is constantly going on on all sides of the little lake. Cement has canaliculi, never Haversian canals. The corpuscles of cement are never equally distributed around the canaliculi; those next the pabulum have more branches than on the side nearest the enamel. What is dentine? A compromise between cementum and enamel. Uncalcified tracts are not solid tracts.

Dr. Crouse moved that an extra session be held to-morrow evening, for the purpose of fixing the place of next meeting and election of officers. Carried.

Adjourned. C. STODDARD SMITH, *Reporter.*

(To be continued.)

INDIANA STATE DENTAL ASSOCIATION.

THE thirteenth annual meeting of the Indiana State Dental Association met in the city of Fort Wayne, June 27th, 1871.

Members present: J. W. Ellis, P. G. C. Hunt, A. O. Rawls, J. W. Hollingsworth, Jno. F. Johnston, Merritt Wells, A. M. Moore, W. H. Gilbert, Jno. Crume, W. E. Driscoll, J. K. Jameson, W. C. Stanley, Isaac Knapp, Evan Snider, George W. Loag, J. D. Brown, E. V. Burt, S. J. Kirk, C. C. Burns, Seneca B. Brown.

New members: Wm. L. Andrews, John Glenn, W. A. Martin, Charles Manor, J. R. Clayton, Edw. H. Creditor, Burt P. McDonald.

Honorary members: Wm. H. Atkinson, New York; J. Taft, C. Palmer, Dr. Barklay, Ohio; Dr. Cravens, Kansas City, Mo.; John L. Scott, Ohio; E. R. E. Carpenter, Illinois.

SUBJECTS FOR DISCUSSION.

1st. What are the Conditions of a Tooth which will justify its Extraction?

2d. Treatment of Exposed Pulps.

3d. Filling Teeth (Proximal Cavities of Bicuspids).

4th. Can the Decay of Teeth be prevented?

5th. Ethics.

6th. Treatment of Sensitive Dentine.

Dr. Jno. F. Johnston opened the discussion of the *first* subject by reading a very meritorious essay, in which he condemned in unmeasured terms that quackery, so prevalent among a certain class of den-

tists, who, through ignorance or cupidity, are led to indiscriminate extraction of teeth subjected to their care. He also warned against the opposite extreme, picturing the ill effects which follow the retention of diseased teeth in the mouth of a patient.

Prof. Atkinson continued the discussion; he prefers God's handiwork to man's mechanism, and insists that all teeth must be saved.

In the discussion of the subject of "Treatment of Exposed Pulps," much interest was taken; nearly all the members participated, condemning the destruction of the nerves in teeth. Prof. Atkinson made a strong appeal for saving all nerve pulps alive, whatever their condition of exposure, and gave in detail his manner of treatment. He substitutes in all cases glycerole of thymol where he has formerly used creasote.

Clinics.

President Stanley having appointed Profs. Moore, Taft, and Atkinson to operate at the clinic on the morning of the second day, they were promptly on hand, each having his patient in the chair.

Prof. Atkinson selected a large posterior approximal cavity, complicated with the crown in an inferior molar, nerve exposed, and gave the association the advantage of witnessing his original and superior manner of filling the same, using oval smooth fillers.

Prof. A. M. Moore selected a most difficult case,—that of restoring an inferior bicuspid, the posterior half of which was entirely gone. This he accomplished in his usual masterly manner, after close application for nearly three hours.

Prof. Taft filled a complicated crown cavity. Much benefit is always derived from his clinical operations, and the interest manifested at his chair showed this to be no exception.

Most prominent among the new appliances at the clinic was Dr. Carpenter's pneumatic burr engine. This wonderful piece of mechanism met with a warm reception by the members.

The afternoon of the second day was entirely occupied in the discussion of "Treatment of Exposed Nerves."

Prof. Taft opened the discussion, pleading earnestly for more FAITH in treating these cases.

Prof. Atkinson said he congratulated himself that he heard fifty dentists in the Hoosier State discussing the principles of physiology and pathology, and thus laying solid foundations for future achievements. He had never seen, he said, so much interest manifested as was shown, by those who had surrounded him the last two days, in this new saving gospel of sound teeth.

In the evening a public session was held, to which the citizens were invited. The subject, "Can the Decay of Teeth be prevented?" was presented.

Prof. Taft opened the debate, taking strong grounds in the affirmative. He traced the causes of decay in teeth to almost every physical irregularity,—to careless and vicious habits as regards health, and to neglect of proper care by the young. Every disease, even those apparently the farthest removed from apparent connection with the teeth, has a greater or less effect upon these organs. He made a very earnest plea for increased attention to children's first teeth.

Prof. Atkinson followed, taking as his text, "Live Godly, Sober, and Righteous Lives," and delivered a masterly discourse upon the duty of care of the body, thus paying due respect to our Creator.

Clinics.

President Stanley appointed Prof. Atkinson to conduct the morning clinic of the third day. The operation was that of removing accumulation of lime from the teeth. After removing as thoroughly as possible with instruments, aromatic elixir of vitriol was applied to dissolve any remaining particles, care being taken to protect the teeth. Prof. Atkinson explained to the association his treatment to restore the wasted tissues caused by these accumulations, and gave many valuable hints in regard to the very important operation of cleansing teeth.

After the clinic was concluded, the association elected the following officers for the ensuing year:

President.—P. G. C. Hunt, of Indianapolis.

1*st Vice-President.*—A. O. Rawls, of Connersville.

2*d Vice-President.*—W. L. Andrews, of Kendallville.

Secretary.—Burt P. McDonald, of Goshen.

Treasurer.—Isaac Knapp, of Fort Wayne.

President Stanley then delivered his retiring address, and the new incumbent accepted the honor in a brief address, and then announced that the third subject for discussion, "Filling Teeth (Proximal Cavities of Bicuspid)," was in order.

The discussion upon this subject was participated in by most of the members. Dr. Palmer, of Warren, Ohio, concluded the discussion, giving the association the benefit of his wonderful skill and system in filling teeth. He also exhibited fillers of his own make, which were models of beauty and perfection.

The Secretary read a paper from Dr. W. F. Morrell, of New Albany, now traveling in Brazil, on the subject of "Dentistry in Brazil." Also, communications from Drs. Geo. W. Keely, of Oxford, Ohio; G. A. Mills, of Brooklyn, New York; and A. T. Keightley, of Green Castle, Indiana.

The association adjourned to meet in Indianapolis the last Tuesday in June, 1872.

Seneca B. Brown, *Secretary.*

NEW YORK SIXTH DISTRICT DENTAL SOCIETY.

The third annual meeting of the Sixth District Dental Society convened June 6th, President Holmes in the chair.

An essay was read by Dr. McCall, on the subject of "Filling Teeth."

The essayist said that the subject was too extensive to attempt to cover the whole ground, and he should therefore confine himself to approximal cavities in bicuspids and molars.

He wished to call attention to two points in particular: the one being the cutting away of the enamel on the grinding surface of the tooth; the other, the use of the *rubber dam.*

He gave the following as an illustration: right superior second bicuspid, with cavity of decay on posterior approximal surface, and difficult to reach; tooth in close proximity to the adjoining molar; no decay on grinding surface of either. He objected to the method of filing a large V-shaped space between the teeth, and gave the following as his method:

With a medium-sized drill commence upon the grinding surface at a little distance from the posterior portion, and drill through to the cavity, following with a burr, and finally, with a chisel, remove the entire portion back to the molar, leaving a dovetailed slot from the grinding surface to the cervical wall of the cavity. He thought thousands of bicuspids had been lost from fear of cutting a little sound enamel. Should there be signs of decay on the anterior approximal surface of the molar, and the cavity is small and not too near the grinding surface, fill it as a simple cavity; but if the enamel be thin, and liable to give way, cut through and make a compound cavity,—the same as in the bicuspid.

In very many instances bicuspids, decayed approximately, should be cut across the grinding surface, so as to include the fissure which we usually find there.

Having properly prepared the cavity, we next apply the rubber dam.

If the cavity in the molar is deep, with walls nearly parallel or slightly undercut, he would fill with cylinders. To make the cylinder, he would fold a half sheet of No. 3 or 4 soft foil into a ribbon a little wider than the depth of the cavity, and roll it loosely upon a four- or five-sided broach. A cylinder is then placed so that one end will rest upon the floor of the cavity, and the other project a little above the surface. This is pressed against the cervical wall. Cylinders are now placed against the remaining walls, forcing them well home with a foot-shaped plugger, until no more cylinders can be introduced; the open space in the centre of the plug is then filled with small pellets of adhesive foil.

In a large proportion of bicuspids with approximal cavities, we also find that decay has already commenced on the grinding surface. In all such cases we should extend our excavations so as to include the whole.

If the opposite approximal surface be also decayed, he would unite the whole into a triple compound cavity.

In filling a compound cavity of this description, he would do it entirely with adhesive gold, filling the approximal portions first, and then bridging across the grinding surface with narrow strips or ribbons.

The essayist expressed himself in favor of the lighter foils; having tried the higher numbers up to 120, he now uses Nos. 3 and 4 soft foil, and renders it adhesive by annealing.

In closing, he spoke in high terms of Green's pneumatic burring engine, which he has used for several months past.

Dr. Melotte said he agreed with the essayist, except, perhaps, that he would not cut away the grinding surface quite as freely.

Dr. Newman said, I think we use too much caution, many times, in cutting away sound tissue, thereby leaving an opportunity for trouble afterward; where there is a cavity in the approximal, and also in the grinding surface, and especially if there is a fissure between them, that portion of the tooth should be cut away, making a compound filling. I consider the rubber dam a necessity; could not do without it.

Dr. Eggleston said many teeth are lost by not using the file and chisel; am strongly in favor of the rubber dam; there are many cases where we cannot do justice without it.

Dr. Gregory would like to hear from some of the older practitioners in regard to contour filling.

Dr. Stocking would like to ask some who are in actual practice in regard to filling where it is necessary to file. Do you fill even with the filed surface, or restore the tooth to its natural shape?

Dr. Darby said he was in favor of restoring the shape of the tooth. In approximal cavities of bicuspids, where it is necessary to use the file, he fills even with that surface; but in incisors should restore the shape of the tooth. He has recently built out for a young man a tooth which was broken by being kicked by a horse; thinks it will prove a success.

Dr. Melotte said we are more successful in building out incisors than any other teeth; thinks that building bicuspids would in many cases prove a failure, especially if the gold is used in masticating.

Dr. McCall said, in his first attempts at building out, he did not have complete success. He used the sharp, deep serrated points of his own manufacture; but with the improved points and the use of the rubber dam, which he holds to be indispensable, his work is far superior. He is very much in favor of contour filling.

Dr. Holmes thought there was no trouble in building out a grinding surface, providing you can control the fluids of the mouth. Most of the failures are caused by doing too much; the gold is built out so as to come in contact with the opposite tooth or the adjoining one. Sponge gold will prove successful if kept perfectly dry; if not, the filling will

soften afterward. In building out, care should be taken not to leave too much opportunity for purchase on the gold, else the enamel will give way. He thought there was not much difference in the use of the automatic and hand mallet; if the automatic is properly used, place the point squarely on the filling, then give the pressure and the stroke.

Dr. Holmes said, in his examinations for concealed cavities, he used floss-silk drawn through between the teeth, and if there is any trouble the silk will catch. He often detects small cavities and tartar in that way, which he would otherwise not find.

Dr. Ireland said he should like to hear from Dr. McCall in regard to sponge gold.

Dr. McCall said he used Morgan's sponge gold in starting a filling, but should not use it in building out.

Dr. Newman said he had found that Morgan's gold will discolor. He has put in a number of fillings for a patient, which all became dark, and foil fillings in the same mouth remaining bright.

Dr. Darby said he used sponge gold at one time extensively, and made it quite a hobby, but found afterward that it discolored.

Dr. Holmes said he used sponge gold on the inside of cavities, but seldom on the surface. He finds that moisture will affect it more easily than it will foil.

Dr. Sumner uses sponge gold, and thinks he can do a better job with it than with other gold.

Dr. McCall said he would like to hear from Dr. Gregory in regard to cylinder fillings.

Dr. Gregory said he rolled his cylinders very close, and has the length of the cylinder about the depth of the cavity; crowd the cylinders about the cervical walls, using wedge-shaped points. He fills the centre with annealed gold.

Dr. Holmes gave his method of using cylinders.

Dr. McCall said he made his cylinders by folding the gold in ribbons, then rolling with a broach.

An essay was read by Dr. Mayer, of Owego, on the subject of the "Treatment of Alveolar Abscess."

Dr. Darby said he treated alveolar abscess by making a direct application of chloride of zinc through the fistulous opening in the gum, using a pellet of cotton, which he leaves in the opening, to be thrown off in the process of healing.

An election of officers took place with the following result:

President.—A. M. Holmes, re-elected.

Vice-President.—G. W. Melotte.

Recording Secretary.—M. A. Newman.

Corresponding Secretary.—T. B. Darby.

Treasurer.—H. Hodge, re-elected.

Censor.—H. Hodge.

Delegates to American Dental Association at White Sulphur Springs, Va.—Drs. A. M. Holmes, Hodge, McCall, Ireland.

Next in order was the paper by Dr. Holmes, "On the best Form of Gold for Filling Teeth."

He would offer some suggestions on the best form of gold for filling teeth; although this necessarily led into a contested field, on account of the various modes of preparing and manipulating this material, to accomplish the same object, and varying all the way from No. 2 foil, as soft as kid, to crystal gold and No. 240 hard foil.

He believed there was a middle ground which would produce better results than either of the extremes mentioned. He said his personal experience inclined him to give preference to the lighter numbers of soft or slightly adhesive foil, as best calculated to apply to the walls of cavities.

It has been his practice to face the walls of cavities with this article fresh from the annealing pan, and so place it that it will reach from the bottom of the cavity out, and overlap the enamel, fixing it at the bottom of the cavity by the use of crystal gold; then build out the plug with slightly adhesive foil.

He would urge the necessity of cleanliness in manipulating gold, and claimed that it should never be contaminated by contact with the naked hands.

After the reading of Dr. Holmes's essay, there was an informal discussion upon the use of anæsthetics, the balance of testimony being in favor of nitrous oxide gas.

Semi-annual meeting to be held at Ithaca, September 26th.

Adjourned.

C. A. Perkins, *Secretary.*

AMERICAN DENTAL CONVENTION.

The seventeenth annual session of the Convention met in Saratoga, August 9th.

President, Dr. J. G. Ambler; Vice-President, Dr. J. S. Latimer; Recording Secretary, Dr. J. H. Smith; Corresponding Secretary, Dr. W. B. Hurd.

The following gentlemen were elected for the ensuing year:

President, Dr. Wm. Dutch; Vice-President, Dr. E. D. Fuller; Recording Secretary, Dr. C. S. Hurlbut; Corresponding Secretary, Dr. C. F. Rich; Treasurer, Dr. R. M. Gage.

The Convention continued in session three days, and adjourned to meet in Boston on the second Tuesday of August, 1872.

A Publication Committee was appointed to take charge of the report

of the proceedings, and make such use of them as in their judgment would best promote the interests of the Convention.

We have applied to this Committee for a report, and received answer that the proceedings had not yet come into the hands of the Committee.

AMERICAN ACADEMY OF DENTAL SCIENCE.

The fourth annual meeting of the American Academy of Dental Science will be held in Boston, on Monday, September 25th, at eleven o'clock A.M.

The annual address will be delivered by Prof. J. H. McQuillen, of Philadelphia. E. N. Harris, *Secretary.*

CLINICAL REPORTS.

UNIVERSITY OF PENNSYLVANIA.

Clinic of Dr. J. E. Garretson, Lecturer on Surgical Diseases of the Mouth.

REPORTED BY DE FOREST WILLARD, M.D., PH.D.

Aphthæ.

Gentlemen,—Here is a patient who presents himself with an ulcer upon the mucous lining of the mouth, which is white, pasty, and curdy in its appearance, and, according to his statement, has existed for a considerable period of time. What is it? From experience, I should say it was evidently what is termed an aphthous sore; but what are aphthæ? The books are as indistinct upon this subject as they are upon that of epulis; and if you recall my remarks when we were treating that subject (*vide* Clinical Reports, Dental Cosmos, Nov. 1870), you will remember that I cautioned you against the confusing character of the various chapters upon the subject.

In regard to aphthæ, I believe that this confusion is occasioned by the attempt of authors to classify different pathological conditions under one head, which is not in itself sufficiently expressive. There are two Greek words from which this term might be derived: one, ἄπτω, "to bind to," or "to fasten upon;" the other, ἅπτω, "to set on fire," the spelling being the same in either case; and it may be due to this fact that the difficulty has occurred, authors selecting one or the other of these words as the basis of their classification. There are certainly ulcerations which will furnish a most congenial soil for that most troublesome fungus, the oïdium albicans, which will "fasten upon" and "bind itself to" these sores most determinedly; while others are most certainly characterized by a sensation which will not be inaptly likened to a "fire." Now, the subject of aphthous ulcerations is one

to which I have given much thought and attention; and I may be pardoned if I spend a few moments in giving you my views, which, although they differ somewhat from those of many writers, yet I would say that they have not been hastily formed or carelessly elaborated. In speaking to you I may be excused if I quote somewhat from my book on Oral Surgery, since I may thus be able to present the views more concisely and rapidly in the short space of time which is allotted to our purpose this morning. I believe that the term aphthæ cannot be applied to any one form of ulceration, but is a term only to be used for a class of sores which may be of many species; and thus we may explain the various views regarding the presence of fungus, exudation, ulceration, etc. I cannot distinguish it as a special disease. I cannot explain it by the presence merely of a parasite, for the fungus oïdium albicans is found quite universally, and is not a disease, nor the expression of a disease,—it is merely a fungus, here finding its proper conditions of development, as the mistletoe, alighting upon an appropriate woody bark, fastens itself in position, and grows to its allotted size. The oïdium would have developed as well had it found a habitat in any other warm, moist soil. Aphthous sores, then, are not caused by the fungus, but the fungus is here because the surface is ulcerated from a general systemic cause, and its spore has found a resting-place where the life-force and the part are not sufficient to cast it off before a foothold is obtained.

An aphthous patch, then, is "a degenerate sore, to be seen, under certain circumstances, upon the mucous surface of the mouth, the fauces, the œsophagus, and, perhaps, upon any portion of the alimentary canal. The most common seat of this patch is the uvula; next, the lower lip; next, the tongue. The sore varies in size from the smallest point to a confluent mass, covering a large surface. It also looks pasty and exudative; is generally oblong in shape; and varies in color from the misty-white of hoar-frost to the dirty-yellow of scrofulous pus. As most frequently seen, such a patch is one, perhaps, of several similar sores." This is, of course, a typical case; the varieties will be numerous.

Under the class aphthæ we shall include canker, thrush, follicular inflammation, cancrum oris, and gangræna oris, all species of a cancroid class. "Thrush, or muguet, one of the species, is an erythematous inflammation, degenerating, after a few days, into a condition of curdy exudation. The inflamed surface, after a longer or shorter time, presents small, white spots, which coalesce, forming the exudate patches. These patches vary in color, and, if they remain moist and clear, may be considered with least apprehension; but if dry and brown, may be esteemed of dangerous import.

"Dissections of the cadaver have exhibited aphthæ not only upon the œsophageal mucous membrane, but also in other parts of the alimentary canal. They have not, so far as I am aware, been met with

upon the respiratory tract; but there is no good reason why they should not have here a like existence.

"In an acute attack of thrush the mouth is hot, and the general condition feverish. Milder cases, or those of easier progress, seem—so far as any observable constitutional sympathy is concerned—to have alone a local signification. But if thrush is a distinct disease, could it be possessed of a double signification? Could it at one time be simply local; at another, systemic? Thrush is common to children prematurely born, or nursed by unhealthy women. It belongs to hot, moist climates, to the situation of uncleanly hospitals; in fact, to any and every condition deemed depressive to the life-force. It is, in short, a systemic, adynamic expression, seated on a mucous surface. That it differs from carbuncle, or cancrum oris, is not the case in fact, but only in degree. It is, in other words, one expression of a common condition,—a species and not a class."

Follicular inflammation—another form of stomatitis very likely to be asthenic—is a term used to signify that the abnormal vascular change is seated in the mucous crypts or follicles. In passing the finger over a surface so inflamed, a studded irregularity produced by the engorgement of the glands is plainly evident. As such inflammation progresses, the bodies become recognizable by the eye, as papillary eminences standing out from an erythematic surface.

In color, they are of a varying red, such variations in shade expressing the constitutional conditions. Follicular inflammation terminates either by resolution or ulceration; when in the latter way, the follicles soften in the centre, suppurate, and have the bottom filled with a whitish pasty mass. When in this condition, they are the aphthæ of M. Billard.

Follicular inflammation appears most frequently in the infant during the dentitional period,—an explanation existing in a quickly and easily recognized combination of a predisposition and an excitant. In its most simple form, that is, when there is no marked dyscrasia, or when the excitant is not of sufficient intensity to irritate to any extent, the lancing of the gums or the application of cooling local remedies, may be sufficient to combat or control the amount of manifestations. When, on the other hand, the conditions predisposing to the disease exist in a state of balance, as it were, with the natural resistive forces, the addition of a second depressant influence, as that resulting from the irritation of dental development, may very well be understood as giving the mastery to an agent or condition otherwise controlled or held fully in check. Thus we explain to ourselves the real and apparent connection of dental irritation with the aphthæ.

From a simple form, or the inflammation of isolated follicles, the condition, in some ill states of the general system, becomes confluent; such extreme form being most frequently noticed in the typhoid exanthems, or in destructive organic diseases. In confluent follicular inflam-

mation a prognosis can only be justly made when every associate and collateral influence has been appreciated. The condition will nearly always be found an occasion for anxiety. Cancrum oris, a species of stomatitis, generally accorded a special classification, differs in no wise from that just considered, except in being more localized, as if the force of the influence had concentrated rather than diffused itself. The complaint known by this name is an asthenic spreading ulcer. In appearance this ulcer differs from what has been given the special definition of aphthæ by most writers only in being more threatening. It has the same pasty bottom, of varying shades of white, the same association of pain, the same persistence. Like other aphthæ, cancrum oris seems to be, and is, associated with dyscrasis, appearing most commonly in the infants of ill-conditioned charities, in the ill housed and poorly fed, having, in all systemic associations, the precise history of the species alluded to as thrush and glandular inflammation. This form of stomatitis, although confined to no exact locality, is yet most commonly met with on the cheeks or gums. It may commence with the phagedenic expression, and very quickly destroy the patient; or, a slight vesicle or pustule may appear to be followed by varying inflammatory association, precisely as though some local poison was the source of the trouble.

The history of cancrum oris differs from that of other cancroid affections alone in degree. This is fully proven in the fact that it is associated with the same causes; that any ordinary canker sore is capable of taking on an ulcerative action; that the fungus oïdium is quite as common to the seat of this as the other affections. In fact, every analogy will demonstrate that the relation is like that which associates a phagedenic with the simple venereal sore, being the difference of degree and not of cause or character.

Gangræna oris, sloughing phagedæna, is another degree or species of the common class. It may commence as an acute inflammation, quickly deteriorating, as a species of fatty degeneration of the epithelial tissue, as a submucous effusion, or as an eschar which falls from its relations with a rapidity which leaves us at a loss for an explanation, except on the inference that the materies morbi have had the most special concentration. The eschar, formed sooner or later, is ashy in color, or a deadish-brown, while the still living parts, particularly the external cheek, if this part should be the seat of the ulcer, has an erysipelatous blush, white, semi-livid, and threatening in appearance. Gangræna oris is markedly a disease of the dentitional period, occurring in ill-fed, ill-clothed, or ill-housed children between the first and second dentitions. Most conspicuous is the constitutional nature of the affection. It is, it seems to me, a general febrile or inflammatory disturbance concentrating its greatest force upon some part of the oral cavity, invited or directed, without doubt, by the irritability therein existing, proof of which inference lies in the fact that in nearly every case we find inflammatory

complications, such associated inflammations being most frequently found in the lung tissue. I take it for granted that the oral concentration saves some other more important part.

Gangræna oris, where it does not too quickly kill and separate its eschar, affords support to the parasitic fungi, the oïdium albicans, as in the other forms of aphthæ, being most frequently met with. Oral gangrene varies, as it would be inferred, in degree. Thus, commencing as a single canker sore, or epithelial degeneration, and terminating with no very serious result, it might be described as a follicular or other simple species. Concentrated, or in its malignant form, it destroys life without affording the physician any extended chance to combat it. In healthy children this is very uncommon, the ordinary canker being generally the worst manifestation. In children exhausted under the exanthems, in those maltreated with mercury, or laboring under syphilitic degeneration, the marked or destructive type is exhibited.

The decomposition of mucus, or the débris remaining from the food, when lodged upon an aphthous sore, forms the best nidus for the development of fungi. It is, as it were, a soil, and it is undeniable that epithelial scales in varying states of abnormal degeneration, inspissated mucus, and particles of decomposed food are common to all such soils. Hence in sickly children the fungoid association is most common, from the fact of the weakened energy of the parts afflicted; thus favoring decomposition and the retention of the débris in the cavity of the mouth, and consequently producing the required soil or habitat of the oïdium as alluded to.

In the foundling hospitals, where the sucking-bottle is used, the spores of fungi find an easy passage to the mouth, being in this way located and developed. In the nursing infant of an uncleanly mother the accumulation and retention of the milk will, with favoring influences, quickly develop fungi. It is the fungus, and not aphthæ, that is contagious, as must be plainly seen; hence one can but wonder at the disputes of Guersant, Billard, Balleix, and others.

Dewees thinks there is no difference between our "babies' sore mouth" and the "muguet" of the French, save in intensity, or in the depressant condition of surroundings. He believes the complaint to be associated with a disordered state of the stomach, and to be a symptomatic disease. Among the symptoms he gives, in addition to the white patches in the mouth, looking like coagula of milk, drowsiness, and watery, greenish, acrid stools.

Aitken, Good, Jourdain, etc. all recognize the variations in the characters of this disease; but I think the title should be extended to include all the diseases I have before mentioned.

In regard to prognosis, it will differ according to the various forms, the milder ones being harmless; the severer almost inevitably fatal. The diagnosis will rest upon the symptoms I have enumerated.

The treatment should be addressed at once to the general constitutional disease which is present, since this is often the greatest cause of alarm. We must remove the cause, if possible; but if this be syphilis, scrofula, etc., then the aphthæ will be most difficult to cure. You will undoubtedly find that local applications have little effect, and at last will learn to rely upon general treatment.

Should the bowels be costive, they must be opened by a saline cathartic; but if diarrhœa is present, then I think you will find the following combination of considerable use:

> ℞.—Magnes. Carb. ℥ss;
> Hydrarg. Chlor. Mitis, gr. iv;
> Pulv. Ipecac.,
> Pulv. Opii, āā gr. ii.
> M. Ft. Chart. No. xxiv.
> Sig. One every two hours until relieved.

The food should receive the most careful supervision, as should also the cleanliness of everything in or about the child, even to the binder. If able to take food, strong liquid diet should be given, and, if suckling, perhaps a new nurse will be required; a change, in fact, which will often be of wonderful benefit in advancing the cure.

Were this simply a local disease, we might expect much benefit from the local application of carbolic acid, etc., since this would most certainly exert its influence upon the oïdium albicans, the fungus here found. Sulphate of zinc, nitrate of silver, acid nitrate of mercury, etc., properly diluted, are also of benefit locally.

When acute aphthæ, as seen in cancrum oris and gangrene, is present, then we must meet it promptly and ably. Quinia sulph. and tinct. ferri chlor. will be immediately required, with wine, or other stimulant. Locally, I have found a solution of cupri sulphas to be of the greatest benefit, used in the proportion of ten to thirty grains to the ounce of water; but other astringents may be employed.

Gangrene is so rapid that it may produce extensive ravages. Our only hope is in entire and speedy support,—iron, quinine, whisky, beef-tea, etc. being freely administered, while, at the same time, we attempt to circumscribe the destructive action by sloughing out the tissues with either nitric acid or the acid nitrate of mercury. Nitrate of silver is useless; in fact, it is never a caustic, its action being too superficial. Pain must be quieted, and all other symptoms appropriately treated.

[The man was then ordered to the seashore for as long time as he could afford, with instructions to live as much as possible in the open air, to bathe freely, eat heartily, sleep much, drink freely of milk, and pay attention to all his secretions and functions. Sulphuric ether was painted upon the patches, and a solution of cupri sulph., gr. xx to f℥i of water, ordered to be applied each succeeding day. Iron, quinia, and strychnia were given internally.—De F. W.]

EDITORIAL.

The announcement in the proceedings of the Pennsylvania State Dental Society, published in the July number of the Dental Cosmos, of the death of Dr. Lewis, of the Snow & Lewis automatic plugger, was incorrect. That gentleman still lives in the enjoyment of excellent health, which we hope he may retain for many years of useful labor. He has been, however, so unfortunate as to lose his father (the Dr. Lewis referred to in the notice), an old and highly respected practitioner of Buffalo. J. H. McQ.

At the meeting of the Southern Dental Association, held in Charleston, S. C., April, 1871, resolutions were unanimously adopted expressive of the sense of the association in reference to the death of Dr. T. J. Crow, of Macon, Ga., and Dr. Warren Johnson, of Savannah, Ga. The resolutions pronounced them to have been faithful in their profession, thorough gentlemen, and upright citizens. J. H. McQ.

BIBLIOGRAPHICAL.

Taking Impressions of the Mouth. By James W. White. Philadelphia: Samuel S. White, 1871.

This monograph is a valuable contribution to the literature of the profession. As its name implies, it is practical in its character; for, although the author is not engaged in the practice of dentistry, he shows himself perfectly familiar with the literature of the subject, and presents tersely a *résumé* of the views of practical men.

There is appended to the monograph a chapter on "Porcelain Teeth," from the new edition of "Harris's Principles and Practice of Dentistry," profusely illustrated with well-executed engravings.

J. H. McQ.

Deutsche Vierteljahrsschrift für Zahnheilkunde. Organ des Central Vereines Deutscher Zahnarzte.

Three numbers of this magazine, viz., October, 1870, January and April, 1871, have been received, and we regret to notice that Dr. Ad. Zur Nedden, of Nürnberg, who has edited the journal for several years, and, with an active and facile pen, has contributed largely to its contents, closed his editorial duties with the October issue. He will, however, continue his contributions to the magazine.

Dr. Ed. Muhlreiter, of Salzburg, has acted as temporary editor since January. The two numbers issued under his supervision are filled with original articles, and translations from foreign journals, of which the Dental Cosmos comes in for a large share. J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*Biological Rôle of Chloride of Sodium.* By M. Bergeret.—'Few persons can conceive the profound modifications which the constitution of the body may undergo after an unusual supply of common salt. In fact, this substance plays an extremely important part in the economy; dissolved in the fluid of the humors, it dissolves the organic substances which they contain. Without the presence of salt in the blood-plasma, fibrin, albumen, musculin, ostein, etc. become solid, and the blood-corpuscles are dissolved. The blood-corpuscles are dissolved in a solution of pure albumen and in pure water, whilst they retain their proper form, and remain unchanged in an albuminous fluid containing one per cent. of common salt.

"'If chloride of sodium be removed from the food of man, symptoms of chlorosis make their appearance; the subject becomes pale, languid, and œdematous. On the other hand, when added to the food in small quantities, salt excites the appetite and determines a more abundant secretion of the saliva and gastric juice, and thus facilitates the digestive dissolution of the aliment, especially the albuminoids. It increases the proportion of blood-corpuscles, and diminishes the quantity of water. An excess of salt provokes renal secretion, and the expulsion from those organs and the skin and lungs of the nitrogenous products of histological waste. But if these effects be continued for some time, common salt becomes injurious. In fact, when introduced into the stomach in large quantities, it passes into the blood, and remains there for some time. The saline blood absorbs more oxygen, and this stimulates the physico-chemical action of histological nutrition. This increased trophic activity consumes a considerable amount of assimilable material. The functions of the stomach and intestines are necessarily increased in activity. But it soon happens that these organs, by elaborating without cessation reparative material, cannot suffice for nutritive activity. From eight to ten grammes of common salt are daily expelled by the kidneys, the skin, the intestine, the nose, and mouth.'"—(*Echo Médical et Pharmaceutique Belge* and *Half-Yearly Abstract.*)

"*Effects of Alcohol and Tobacco on the Sight.*—On the subject of color-blindness and amblyopia, Dr. Richard H. Derby (*N. Y. Medical Journal*) says: 'Almost always both eyes are affected. This form of amblyopia occurs almost solely in men; out of fifty-six cases only three were women. It is a disease of adults; its frequency increasing from the twentieth to the fortieth year. In a portion of the cases abuse of alcohol was certainly the cause of the affection, and in others the excessive use of tobacco undoubtedly contributed to produce the disease. Forster, in a paper on the injurious action of tobacco on the vision, attaches still greater importance to this agent as a cause of amblyopia, supporting the views of Mackenzie, Sichel, Hutchinson, Lureiro, and others. The author cites twenty cases, in which there was a central scotoma, with a horizontal diameter of 18° to 25°, within which large letters could still be recognized. All of these patients suffer from some

affection of the digestive and nervous system. Loss of appetite, constipation, loss of sleep, were common symptoms. Each one of the twenty patients was a strong smoker, and in eleven of these cases a very marked improvement was observed when the use of tobacco was given up.' "—(*Detroit Review of Medicine and Pharmacy.*)

"*Chorea of the Tongue from Emotion.*—M. Amédée Latour, describing the bombardment of Chatillon, thus speaks of its effects on himself: 'During the first days I had tremblings at every discharge of cannon, together with strong and frequent palpitations of the heart and tremor of the hands. My tongue was seized with a kind of insupportable chorea, which, indeed, I have often experienced on the occurrence of vivid emotions, of which, during my life, I have had my share. It is a strange phenomenon, which I have seen nowhere described. The muscles of the tongue are seized with convulsions, which cause the organ to execute irregular movements to the right and left, fix it against the palate, or curve it back on the frænum,—keeping it in constant motion, and occasioning a most unpleasant and irritating sensation. Speech is impeded, and articulation painful, so that it is impossible to read aloud, and to converse is a matter of difficulty. These lingual movements are entirely independent of the will, which can neither arrest nor modify them, whatever effort be made. Sleep suspends them; but they reappear soon after waking. This inconvenience lasted during the first week, but after that, as I became accustomed to the noise, the lingual and cardiac muscles resumed their normal action.' "—(*Union Méd.* and *Med. Times and Gaz.*)

Double and Complete Fracture of the Lower Jaw. Case by Leon J. Willien, M.D., Effingham, Ill. (*Cincinnati Lancet and Observer.*) —"Charles B., aged thirty-two years, of a robust constitution, a blacksmith by profession, while attempting to bridle a horse, was kicked directly under the left and anterior side of the lower jaw, fracturing it in two places: 1. A complete and transverse fracture between the two last molar teeth, with considerable laceration and contusion of the surrounding tissue, a small portion of the upper fragment protruding through the skin. 2. A complete and transverse fracture between the cuspidatus and lateral incisor teeth.

"None of the teeth were displaced, excepting the wisdom tooth, which was loosened. The patient was much exhausted, in consequence of loss of blood and being jolted in a wagon over rough roads for a distance of fifteen miles. The fractures were readjusted as well as the circumstances would permit on account of the œdema of the tissues, and the fragments were maintained in place by slipping a silver wire between the two incisors and the second bicuspid and molar, and twisting them close together; a frond placed around the chin in order to hold the fracture in place; astringent gargles used freely, and sulphate of morphia internally to relieve pain. The swelling having decreased, on the third day we proceeded to apply a permanent splint. We succeeded admirably in this, by the ingenious hand of our dental surgeon, Dr. L. P. Besier. After the removal of the bandages, the parts were held in place by silver wires, while Dr. Besier took an impression on wax, and made a splint of vulcanized rubber, extending from the wisdom to the canine tooth included. This splint fitted the case *à merveille.*

After stimulating the patient with brandy, his mouth was kept open by an assistant; a silver wire was passed between the two first molars, and slipped through the upper aperture of the splint.

"During traction, by a sudden motion of the patient, the wires applied on the anterior fracture broke; this enabled us to coapt the posterior fracture first, by passing the splint firmly over the teeth. The anterior fragment was then brought in place, and the splint was fastened down with wires in the interstices of the teeth and fastened over the splint, rendering the whole immovable.

"The plate fitted over the wisdom tooth with a thick prominence upon it, in order that the upper tooth should press on it, and keep the posterior fragment in place. The jaw was then supported from below by a semilunar pine board with a strip of tin at the anterior edge, well packed with cotton, in order to prevent the pressure or irritation of the thyroid cartilage during deglutition. This was fastened to the crown of a hat, without rim, with elastic bands. Low diet and rest was ordered during six weeks, at the end of which he returned to Effingham to have the splint removed. The whole was a perfect success, a moment of joy for our patient, and a feeling of satisfaction for us in seeing the happy result."

Caries and Subsequent Removal of the Whole Inferior Maxilla. Case by R. H. Preston, M.D., Newboro'.—"Mr. L. B., aged forty-six, a farmer residing in the township of Bastard, County of Leeds, Ontario, a man of spare but temperate habits, was attacked on the 18th of October last with severe pain in the second molar tooth, right side of the lower jaw. The tooth was decayed so as to expose the nerve. Pain was severe, and the face soon began to swell until the fourth day, when suppuration ensued, but instead of finding relief his symptoms became more severe, the discharge increased, also the swelling, which extended along the course of the bone. He went on in this way until the 28th of October, when I was sent for. I found him laboring under high constitutional excitement, pulse running 150, skin hot and dry, with pus discharging freely from around the decayed tooth. With great difficulty I succeeded in opening his mouth enough to extract the tooth and the one in front of it, both being quite loose. I ordered beef-tea, chicken-soup, egg, cream, and brandy to be given freely; also put him on syrup of iodide of iron, and gave him a wash of carbolic-water and glycerin.

"On the 31st, saw him again, the swelling and soreness greater and extending round the jaw; pus was oozing from the side of every tooth on the right side. The constitutional symptoms more severe, hectic, night-sweats; pulse 150; growing weaker and very drowsy. Beef-tea, etc. continued; brandy increased. Nov. 3d, saw him again; found him much weaker, disease extending, pus escaping from around every tooth in the whole jaw, and in large quantity; removed more teeth; increased as much as possible the amount of nutriment and stimulant. Nov. 8th, saw him again, and found him apparently sinking. The quantity of discharge was full a pint in twenty-four hours, a thick yellow-greenish pus; feet and legs œdematous, pulse weak and ranging from 130 to 150. At about this time, three weeks from the onset of the pain, besides continuing the nutriment, etc., I gave him large doses of quinine, also gave him cod-liver oil. For the next three weeks I saw him twice a week (he lives over twenty miles from me, or I should have visited him

oftener), and during this time the discharge gradually became less, and he rallied in strength so that he was able to sit up for a short time every day. Nov. 28th, Dr. Addison, of Farmersville, saw him with me, and we decided to remove all the teeth, hoping thereby to save the body of the bone, but soon after their removal (one was left) the gum fell from the bone. I then removed the greater portion of the alveolæ, when the condition of the body of the bone was discovered. The sloughing of the bone continued to go on rapidly. I then sent for Dr. Octavius Yates, of Kingston, who met me on the 24th December, when we removed the whole bone, cutting it in the mesial line and taking out first one and then the other side, and only requiring to use the handle of a scalpel to separate the soft parts. No cutting was required, and only one or two teaspoonfuls of dark venous blood lost. By following, with the finger, the track left by the bone, the glenoid cavity could be distinctly felt, sound and free from disease. At the point of the chin a slight cartilaginous band could be felt, no doubt nature's commencing substitute for the jaw.

"For some time there continued more or less œdema of the lower extremities, but it has now quite disappeared. The chin has contracted but very little, while his cheeks are fuller than formerly, and although his voice is changed, his articulation is perfectly distinct. His gums, or what is left of them, are gradually becoming harder, and he now eats hashes, puddings, etc., to such an extent that he weighs fifteen pounds more than his usual weight before he became ill.

"The bone itself, but for one sound tooth which remains, would, at first sight, hardly be recognized. The surface of the bone only here and there is preserved, while the whole interior portion seems to be lost. The bone, or rather the pieces, may be seen, having been added to the Museum of the Royal College of Physicians and Surgeons, Kingston.

"In conclusion, the question naturally arises, what was the cause of this rapid and complete destruction? No constitutional, hereditary, or acquired taint can be traced or found. No other part of the body was, or has yet been, affected. If left to itself (the supporting treatment excepted), the bone would probably have been thrown off or out, and thus furnish an example of spontaneous excision unheard of (by me, at all events) before meeting with this case."

Dr. Preston, at my request, sent me the above particulars of his most extraordinary case, and I should have forwarded them sooner had I not wished to be able to report the condition of the subject of it at a later date. I heard from him last week, and the report is that he has continued to improve slowly but steadily from the time of the removal of the bone, and that he considers himself perfectly recovered, the only thing preventing it being the inability of the dentist to find sufficient footing for a plate of teeth on the lower jaw. This was running in the man's mind from the first; for before proceeding to remove the jaw he was particularly anxious to know how soon after its removal he would be able to have a set of artificial teeth. I need hardly say that the reply was not very encouraging.—Octavius Yates, M.D.—(*Canada Lancet.*)

Facial Neuralgia. Case by John J. McSheehy, M.D., Boston.—"D. C., aged forty-two, applied to me June 17th, 1871, suffering from paroxysms of severe pain, mostly of a plunging, lancinating character, shooting in the course of the facial nerves and extending under molars of the left side. He had felt no trouble in the superior ma

lary of that side. The patient had applied for medical treatment four years previously, in Montana Territory, and again in New York, without obtaining any relief. He had tried all known remedies without success. Visited Boston to see his sister, and called on me as before mentioned.

"On making an examination, I found that three molar teeth had been extracted by advice previous to his arrival. A spongy state of the gums existed, with a slight ulceration and fetid breath. Paroxysms of pain occurred every ten or fifteen minutes, preventing sleep. When he became overpowered by sleep he was at once awakened, and started up screaming with the severe pains.

"A faithful use of cinchona, iodoform, and ferri valerianat. caused some general improvement up to the 30th of June, at which time I commenced subcutaneous injections, and also the employment of hydrate of chloral, without favorable result. The following lotion was also employed, but without avail:

"℞.—Ætheris sulph. ℥ij;
Chloroformi,
Tincturæ opii,
Olei terebinthinæ,
Tincturæ capsici, āā ℥iij;
Extracti belladonnæ, ℥i. M.

"No ease was obtained from any liniment or medicinal preparation whatever. I made an examination of the teeth and gums on the 2d of July, and found what I supposed necrosis of the alveolar process of the superior maxilla on the left side. I recommended extraction of the diseased bone, as I thought, an opinion I had formed because the apparent sequestrum was above the alveolar process. I consulted with Dr. Daniel G. Harkins, surgeon dentist, of Tremont Street, and we concluded to extract what appeared to be the necrosed bone, but which, on extraction, proved to be a dens sapientia covered with a fleshy bulb and imbedded in the superior maxilla. The tooth had pressed on the trunk of the infradental nerve in its course, and had caused pain of the most excruciating character, which the patient had referred to the lower maxillary bone.

"Since the wisdom tooth has been extracted he has not had a single paroxysm of pain, with the exception of one or two momentary flashes. He feels well and free from pain, and has slept sounder since than for four years previous, and intends to return to Montana Territory to resume his mining operations."—(*Boston Med. and Surg. Jour.*)

Neuralgia, Treatment by Hypodermic Medication.—Dr. J. Curtis Smith, of Middleport, Ohio, writes (*Med. and Surg. Reporter*): "I have by this method permanently cured some cases of long standing after they had resisted all the usual treatment. One case of severe neuralgia that had resisted the internal use of quinia, iron, etc. for some weeks, given by others, yielded promptly and permanently to one injection of quinia two grains, morphia sulph. one-fourth grain; and this notwithstanding the exciting cause (old decaying teeth) still remained. This was more than I anticipated for the remedy or patient."

Carbon Bisulphide, Rhigolene, and Oleum Menthæ Piperitæ, as Local Anæsthetics.—Dr. S. R. Nissley, of Pemberton, Ohio, writes (*Jour.

Mat. Med.): "I have been in the habit of using the bisulphide of carbon as a local anæsthetic for several years. I have tested its efficacy and potency in facial neuralgia, hemicrania, odontalgia, and lumbago, and the relief it afforded to the sufferer was almost instantaneous. My mode of application was this: place a pledget of cotton into a wide-mouth bottle, saturate it well with the bisulphide and apply it to the painful part, and as soon as the patient complains of smarting sensation change the bottle, carefully following the course of the principal nerve that seems to be involved in the difficulty. I have used a combination of rhigolene and the oil of peppermint as a local anæsthetic in a number of neuralgia cases that presented themselves at my office for relief, and thus far my success in those cases has been far beyond my most sanguine expectations. After several applications, they express themselves cured. I have recently been in the habit of adding an etherial collodion to the compound, and I am gratified to say that in the combination I have a specific which will, under almost any circumstance, when the part is accessible, relieve the patient instantaneously. Its effects are magical. In a severe case of tic douloureux this compound was tried, and in several minutes the patient was relieved."

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Bromide of Ethyl, Hydrobromic Ether, as an Anæsthetic.—"Among other bromides that have medicinal qualities is hydrobromic ether, bromide of ethyl—C_2H_5Br. This ether is a light volatile liquid, made by distilling four parts of powdered bromide of potassium with five parts of a mixture consisting of two parts of strong sulphuric acid and one of alcohol, having a boiling-point of 104° Fahr., a specific gravity of 1·400, and a vapor density of 54, taking hydrogen as unity. It is nearly insoluble in the blood.

"This ether is of interest from the fact that the late Mr. Nunneley, of Leeds, proposed and used it as a general anæsthetic, and came to the conclusion that it was the best and safest of all known anæsthetic substances. A few weeks before his death I had the pleasure of visiting Mr. Nunneley, and in the course of our many conversations on scientific subjects, he spoke again of his experience with the bromide, and begged of me to submit it to a fair and strict investigation. I have carried out his wish, and can report upon hydrobromic ether that it is, as Mr. Nunneley said of it, one of the safest of general anæsthetics. An atmosphere containing from eight to nine per cent. of the vapor of the bromide of ethyl, causes, when inhaled, entire destruction of common sensibility rapidly and safely. The breathing remains tranquil, the pulse quiet, the expression good; the transition from the first to the third degree of narcotism is, moreover, so rapid that the second degree—degree of muscular excitement—is scarcely recognizable. There is no sign of apnœa; and when, in animals, the inhalation is carried to the extreme, the resistance of the heart to the paralyzing action of the narcotic is good. As might be expected from the low boiling-point of the ether, 104° Fahr., and its insolubility in the blood, it is rapidly eliminated from the body when it has been withdrawn, so that the period of recovery is short,—from three to five minutes.

"When inferior animals are made to sleep into death by the vapor of the bromide of ethyl, the heart is found, directly after death, with blood on both sides and free of vascular congestion. The color of the blood on each side is natural, and the lungs are left charged, without

being surcharged, with blood. The coagulation of the blood is natural. The heart retains its irritability for as long a period of time as after death from methylic ether.

"Mr. Nunneley's favorable opinion on the action of hydrobromic ether is therefore confirmed in respect to essentials, but I am not thereupon inclined to suggest that it should be employed in place of other and better known general anæsthetics. For, irrespectively of the trouble and cost of making the ether, it has certain faults which are opposed to its general employment. It causes irritation of the throat in some cases, and occasionally vomiting; added to these objections, the fluid easily undergoes change on exposure to the air, with liberation of free bromine, when it becomes difficult, if not dangerous, to inhale."—(Dr. B. W. Richardson, *Practitioner* and *Medical and Surgical Reporter.*)

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"*Bromide of Methyl.*—In 1867–8 I made some researches with bromide of ethyl, $CH_5Br.$, a gas made by mixing at a low temperature fifty parts of bromine, two hundred of methylic alcohol, and seven of phosphorus. By using cold the ether can be distilled over as a fluid, but it boils at 55° Fahr., and is therefore at ordinary temperature a gas. Its vapor density is 48. Bromide of methyl, like bromide of ethyl, is an anæsthetic equally effective as the latter, and sharing in all its fault.

"As matter of physiological rather than of practical interest I have recorded these facts respecting the bromides of ethyl and methyl; but there is another point in which they may be considered, and which is of direct practical worth. They are both powerful deodorizers and destructives of decomposing organic matter; and as they are from their volatility capable of being conveyed in fluid state of subdivision, they might be employed with advantage in many forms of disease."—(*Ibid.*)

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Chloride of Zinc with Chloride of Potassium.—"Ordinary chloride of zinc is unsatisfactory as an escharotic, because of its hygroscopic tendency. M. Bruns states that this defect may be overcome by fusing two parts of the chloride of zinc with one of chloride of potassium, and casting in sticks,—the latter to be wrapped in tin foil."—(*Practitioner* and *Pharmacist.*)

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Chloride of Aluminium. From Dr. Sansom's "*The Antiseptic System.*"—"This agent has been more recently advocated by Mr. John Gamgee, and has been introduced into commerce under the name of chloralum. The error, however, must not be committed of regarding it as a novel antiseptic application. It has been long known, and many experiments have been made with it both in this country and in France. A reference to the table recorded by Dr. Angus Smith will show that this agent is far from occupying the highest place under those circumstances of albuminous material in a moist state which obtain in wounds. Mr. Gamgee has, however, shown that chloride of aluminium is very soluble and manageable, and it has the advantage of being free from poisonous property. Its power is very manifest in preventing the ill odor of putrescent material; moreover, its expense is small. It is a powerful astringent. This quality, though valuable in cases wherein hemorrhage is to be dreaded, is not an unmixed good, for an agent which so strongly contracts the capillaries is scarcely *prima facie* likely

to promote rapid union of lacerated parts. Mr. Lund, of Manchester, found that a solution of chloride of aluminium of a specific gravity of 1020 was irritating to the sound skin, unless the disengaged vapor had free exit. In a case of bruise of the arm he used it according to antiseptic principles, but extensive sloughing took place, and it had to be discontinued. The position of this salt as a surgical antiseptic must be considered as yet *sub judice*."—(*Medical Times and Gazette.*)

"*A Disinfecting Solution.*—Dr. Frank Wells, Cleveland, Ohio (*Boston Med. and Surg. Journal*), late Master of Obstetrics of the University of Vienna, gives the following formula for a disinfecting solution, used by all students and surgeons in the Vienna Hospital, who have examined any patient with a doubtful vaginal discharge:

"℞.—Potass. hypermang. ʒss; aquæ destillatæ, lb. ij. M. The following solution is required to remove the stains of potash: ℞.—Acidi muriatici, ℥vj; aquæ destillatæ, lb. xiv. M."—(*Med. Record.*)

"*Ozone stored in Solution.*—Among the queries addressed to us by our correspondents is one in reference to the possibility of storing ozone in solution. It would certainly be very convenient for medical and bleaching purposes if it were possible to do so, and we can suggest a path of research by which it may possibly be attained. Schönbein has shown that if an amalgam of zinc be shaken violently with water, binoxide of hydrogen is produced. We here have a compound that in many respects may be substituted for ozone, and is obtained in a very simple manner. If the process were continued for several hours, the water then filtered and the filtrate evaporated over sulphuric acid under the receiver of an air-pump, we could probably obtain a concentrated liquid, suitable for the purposes to which the binoxide of hydrogen is now applied. The drift of experiments goes to show that it is better to prepare the ozone at the moment it is wanted. It is too easily destroyed to be stored in anything. For many purposes the permanganate of potash is the best agent to use for the generation of ozone, when required for bleaching. A small quantity of this salt placed in a bath, and a few drops of sulphuric acid added, liberates sufficient ozone to bleach engravings and even paper stock. And it is the nearest approach to the practical application of ozone to the arts of any that we have seen tried. We are aware that Wilde's electro-magnetic machine has been used to furnish ozone for refining sugar and syrup; and the constant discharge of the electric spark by aid of the Ruhmkorff coil has been proposed for the same purpose. We adhere, however, to the belief that permanganate of potash will be found to be the best agent, on the whole, for procuring a supply of ozone at the shortest notice."—(*Sci. Amer.*)

"*Contagion by Volatile Virulent Matter.*—The Academy of Sciences of Paris heard (July 10th, 1871) a paper of M. Chauveau, of Lyons, the eminent veterinarian, describing experiments which prove that the fluid evaporated from virulent matter fails to convey disease by inoculation, whilst the matter itself succeeds. M. Chauveau concludes that the contagious principles are not floating in the atmosphere in the shape of gas or vapor, but that they are always adherent to some solid matter which is taken up by the gastric mucous membrane. Contagion at a

distance takes place in this manner. In the rinderpest, for instance, the conveyance of the disease is more frequent and more rapid in confined spaces than in the open air. One of the experiments is performed thus: virulent matter is poured into a capsule, which is placed on a piece of glass, and the whole covered with a transparent bell. Under the glass is a sand-bath, which promotes gentle evaporation. To facilitate condensation the bell is covered with cotton-wool, on which ether is now and then dropped. Some fluid now fixes on the inner aspect of the bell, and is obtained by means of a pipette. The liquid is then inoculated, as also the actual virulent matter in the capsule. The effects with the latter are positive, and negative with the former."—(*Lancet.*)

"*Local Action of Pus.*—Dr. S. Samuel, of Königsberg, gives the following as the results of his experiments on the local action of pus: 1. Putrid material introduced subcutaneously into the ears of rabbits, to the extent of from ten to fifteen drops, occasions a more or less rapidly developing putrefactive process to take place in them, accompanied by swelling, green discoloration of the part, and intense putrefactive odor. These effects not only constitute the most characteristic reaction of putrid matter, but they also serve to detect the existence of a putrefactive process when the matter possesses no odor and has no chemical reaction. 2. This local process of putrefaction, which for the most part extends in only a slight degree beyond the part originally affected, is the more distinctly circumscribed by a well-defined line the longer the time the local process has for its development. 3. For, coincidently with the local putrefactive process, septicæmia is developed, apparently by absorption of the injected material, which leads, sooner or later, according to its intensity, to death. 4. The putrid material, when introduced in smaller quantities or in more diluted form, occasions the most varying degrees of inflammation, accompanied by more or less extensive suppuration, so that even the slightest prick is followed by a certain amount of suppuration. The forms of inflammation thus excited have nothing peculiar about them, and they may in their progress lose the putrefactive odor of the fluid to which they owe their origin. 5. The occurrence of characteristic symptoms of putrefaction goes hand in hand with the cessation of the local circulation. 6. Not all putrefactive materials produce within the same period of time the same quantity of putrid poison, and their consistence occasions variations in the rapidity of their action. 7. On comparing the effects produced by the subcutaneous injection of the various substances capable of being chemically separated in putrefying fluids with those of the pus itself, it was found that a saturated solution of leucin (1 to 27) was followed by very slight effects; carbonate of ammonia, formic, butyric, and baldrianic acids, and sulphide of carbon, all acted in quite a different manner, causing coagulation of the blood, with and without secondary vesication of the parenchyma. Solution of sulphuretted hydrogen, containing 3 vol. H S to 1 vol. aq., caused a weak green discoloration in the first instance, then slow suppuration, and, therefore, also a different effect. On the other hand, the effects of sulphides of ammonium presented many points of analogy, a few drops of a solution of the yellow sulphide of ammonium, or of the bright red sulphide, producing very similar effects when subcutaneously injected to those of putrid fluids, except that the smell is peculiar. Integrity of the skin gives immunity

to sulphide of ammonium as well as to putrid fluids. 8. The subcutaneous action of the products of inflammation varies in producing the most different disturbances of nutrition, from slight inflammation to strong suppuration, putrefaction, and mummification. But the contagious nature of non-specific pus can be no more established than the existence of a special inflammatory poison. Among the inflammatory products, however, very different chemical and physical agencies are operative which induce quite distinct effects. 9. The chemical nature of the products results from the nature of the part originally affected, the cause of the inflammation, the violence of the suppuration, etc. A collection of pus is an albuminous mass in the body in which an anomalous metamorphosis of tissue is taking place. 10. The tenacious mucus of the nose of a violent catarrh produces a thick, yellow, and dense sac; the thick pus of a mammary abscess produces a violent inflammation, leading to coagulation in twenty-four hours; the pus of a boil acts in the same way, whilst the pus *bonum et laudabile* of a bubo produces a persistent, strong, and firm infiltration of the ear. 11. The glycero-phosphoric acid found in fresh pus gives rise in weak solutions to slight, in strong (1 to 9) to severe inflammation, not, however, running on to suppuration. Solution of common salt causes suppuration when injected of no greater strength than of 1 to 100."—(*Ibid.*)

"*Gases of Pus.*—Professor Mathieu, of the Val-de-Grâce Hospital, has recently (*Gaz. Hebd.*) published the results of some investigations which he has been engaged in concerning the gases of pus. Among those which have been extracted is hydrogen, in sufficient quantity to produce the characteristic sound in its burning, even when only a few cubic centimetres of the pus have been operated upon. Besides this, pus contains carbonic acid, a small quantity of nitrogen, and some traces of sulphuretted hydrogen, but never any oxygen. After specifying the results of several analyses of pus derived from various sources, M. Mathieu says:

"'The following is the conclusion to be drawn from these analyses: the products of suppuration have such an affinity for oxygen that they docompose organic substances in order to assimilate this gas, and to set at liberty carbonic acid and an excess of hydrogen. Our researches have been extended to pus which has not come into contact with air, and to pus which has been exposed for a more or less long period to free air. As a consequence of such comparative experiments, it results that the pus of itself can undergo decomposition, for if it be kept external to the body the quantity of hydrogen and carbonic acid may become increased twofold. The pus of glandular abscesses contains a much smaller proportion of carbonic acid than that derived from other sources, but it contains a sensible quantity of hydrogen. Pus of pyæmic subjects contains a very large quantity of gas, indicating the operation of energetic elements of disorganization. The toxical properties of pus, supposing that they are dependent upon the phenomenon of oxidation, are thus very variable; but I have never yet met with any, even when it has been collected free from the contact of air, which has not contained hydrogen, and which was, therefore, capable of producing decomposition of the animal matters which enter into its composition. Analyses of gases of the blood exhibit no traces of hydrogen. As complementary to these analyses of the gases of pus, I have performed

other experiments consisting in the retention of a given quantity of purulent liquid in contact with a determined volume of air. When the temperature of this liquid is raised to the equivalent of that of a wound, an amount of oxygen disappears in two or three hours, which it would require three or four days to effect at the ordinary temperature. Heat is, therefore, a primary element in the production of the change in pus. Agitation of the air is a second cause of speedy decomposition of the pus; for while, after being kept in a state of quietude for three hours, the absorption was but 2·95cc., it was 3·22cc. after only two hours, when the liquid had been subjected to a momentary agitation. The change is effected still more rapidly if a little dried purulent matter be added to the liquid, the proportion of oxygen absorbed by pus so contaminated being almost double the quantity derived from the same source, and kept the same time, but without receiving such addition. The addition of a putrid liquid also accelerates the absorption of oxygen by a purulent liquid, but in a less proportion. Dried pus, therefore, plays the part of a ferment in laudable pus. . . . . Pus, and especially pus which has undergone alteration, is certainly a cause of mortality after traumatic lesions; and as dried purulent dust has thus been shown to render the alteration of pus much more rapid, we can understand the danger of overcrowding and insufficient ventilation of wards containing wounded persons. The above experiments also explain the utility of cold applications to wounds in a state of suppuration, and the necessity of immovability during the treatment of wounds of the joints or bones treated conservatively.

" 'When a powerfully-smelling pus is distilled at a mean temperature of 45° C., which is possible by means of the mercurial pump, a fetid and very alkaline liquid is obtained. My assistant has shown that this alkalinity is due to ammoniacal salts (the carbonate and sulpho-hydrate), and he has also been enabled to separate by ether a small quantity of volatile oil, to which pus about to become decomposed certainly owes its odor. Believing that this liquid might be endowed with deleterious properties, I injected it into the trachea and cellular tissue, but without giving rise to any serious accidents. These facts corroborate the theory held by Professor Verneuil, which attributes to a fixed substance all the phenomena of septicæmia. The volatile products of pus would never prove a cause of poisoning or of propagating putrid infection to a distance. This, indeed, might be deduced *a priori*, as purulent infection never takes on the epidemic form except in subjects in whom there is a lesion of the integuments. The dried purulent dust suspended in the air, and becoming deposited in wounds, hastens on the oxidation of the pus, increases its noxious properties, and multiplies cases of pyæmia.' "—(*Med. Times and Gaz.*)

"*Syphiloma* (*Gummata Syphilitica*) *of the Tongue.* By Dr. Neumann, of Vienna (*Allgemeine Wiener Medizinische Zeitung* and *Half-Yearly Abst.*).—The dorsum of the tongue, as is well known, is frequently at its centre or lateral portions, more rarely at the root of the organ, the seat of infiltrations,—the so-called syphilitic gummatous tumors, the size, superficial aspect, and progress of which undergo many variations. These tumors, which are of firm consistency, are seated partly under the mucous membrane, partly in the muscular tissue of the tongue, and are developed from small infiltrations of the size

of a pea to prominent nodules as large as a bean or hazelnut, or even larger. The growth sometimes extends laterally, so as to form level patches; in cases of this kind a greater part of the tongue, especially its edges, feels thickened, infiltrated, and hard as cartilage. In this affection the mucous membrane covering the growth is either smooth or covered by numerous papillary growths, which occupy a large portion of the tongue in the form of broad-based warty formations, or the surface of the dorsum may be traversed by shallow furrows, or by deep fissures crossing in various directions,—rhagades; or again, if the mucous membrane be irritated by the sharp edge of a decayed tooth, it may present superficial patches of gangrenous tissue.

"The whole volume of the tongue is increased to a considerable extent. Finally, the disease may proceed by softening of the nodules to a more or less extensive and deep loss of substance, in consequence of which the tongue on the affected side presents large cavities, which, when the loss of substance has affected the root of the tongue, exert a considerable influence upon the consonance of the speech. The movements of the tongue, also, as in speaking, masticating, and swallowing, cause much pain. These new formations, consisting partly of granulation tissue and partly of connective tissue,—which tissue, in its further development, becomes either soft and jelly-like, or is converted into adipose tissue, and forms dry yellow lumps,—were described by Robin and E. Wagner as syphiloma. They present granular cell contents, and their cells and nuclei lie in peculiar hollow spaces,—alveolar formation.

"In cases of this kind one has to distinguish the infiltration of syphilis from that of cancer. Hardness, rapid growth, painfulness, and an uneven surface, are, indeed, symptoms which speak more for cancer than for syphilis; the existence, however, of a sharply-defined loss of substance, and the presence on the dorsum of the tongue of warty or condylomatous growths, are indicative of gummatous deposit. In cancerous growths of the size of syphilitic gummata, the submaxillary glands would certainly be enlarged. In doubtful cases the diagnosis might be determined by means of the microscope. In some cases the distinction may be indicated by the course taken by the disease. In syphilitic gummata the breaking down of the tumor commences deeply, and proceeds to the surface; in cancer the opposite takes place, loss of substance commences superficially, and gradually extends to the centre of the growth."

"*Grafting of Mucous Epithelium upon a Granulating Wound.*—On the 13th of February last, Dr. V. Czerny (*Centralbl. f. d. Med. Wissensch.*) cut off a long uvula; half an hour afterwards several small pieces of the mucous membrane were, with the aid of adhesive plaster, fastened upon the surface of a couple of healthy ulcers remaining after an operation for the removal of breasts. In one the grafts failed, while in the other, on the 20th of February, two of the grafts appeared as tender islets of epithelium with bright-red borders, which became confluent on the 25th. Notwithstanding the islets grew rapidly to the size of a thaler (1 5-16 in.), the centres did not become white and opaque, as occurs in the case of grafts of epidermis, but the surface remained pale-red, smooth, and glistening, as if covered with a pellicle of collodion. The formation of epidermis soon advanced from the margins of the ulcers, and blended with the islets of epithelium, and the wound

became gradually reduced to a very small circumference. A microscopic examination on the 21st of February showed large flat cells with very plain nuclei, such as are to be seen in the mucous membrane of the mouth. Later were to be seen, in the deeper layers, caudate cells, which could not be distinguished microscopically from cells taken from the edges of the cicatrix."—(*Allgem. Medic. Central Zeitung* and *Medical Record.*)

"*Scientific Disinfection.*—The Academy of Sciences of Paris appointed a commission to inquire into the best means of disinfecting. Starting with the recognized fact that infection is transmitted by living germs, spores, or animated ferments, the commission has arrived at the means apparently to be recommended in purifying infected places, linen, and furniture. In the first place, it is declared that the persons employed to disinfect generally escaped infection. In the first rank of disinfectants is placed hypoazotic acid ; in its rapid action this agent is converted into neutral bioxide of azote, which immediately takes from the air of the place to be disinfected two equivalents of oxygen, in order to reconstitute itself in the form of nitrous vapor, and recover all its former energy. These transformations continue without cessation so long as any organic substance remains to be destroyed, and any free oxygen is still in the place. Unfortunately, nitrous vapor is poisonous to man, so that it can only be employed with great precautions. All orifices and fissures, door- and window-joints, etc., must be carefully stopped by means of strips of paper and paste. The gas having been developed in the sealed room, at the end of forty-eight hours the room is entered with the aid of the Galibert apparatus, which, by its provision of air, allows the wearer of it to penetrate into all parts of a room or ward filled with noxious gas, and remain there if necessary a quarter of an hour. The windows are opened, and the ventilation does away with all trace of the acid vapor.

"This method seems a sovereign remedy, and it must not be confounded with the fumigation by means of chlorine or hypochlorites, which simply disinfects by destroying the odorous gases. A far more convenient plan, of which the efficiency has been perfectly demonstrated, is pure phenic acid, of which a given quantity is poured upon silicious powder or sawdust of three times its own weight. The quantity used may be even greatly reduced, the floor of the apartments and the bedclothes of the patients being sprinkled daily with water containing from one-twentieth to one-thirtieth of its own weight of the acid.

"Some years since, during a very hot summer, it was found impossible to purify the air of the Morgue, the quantities of gas disengaged by the corpses being so great that ventilation, chlorine, and hyperchlorates were all insufficient. It was proposed to arrest the putrefaction itself by killing the germs. Phenic acid was dissolved in a reservoir used for sprinkling the bodies ; the suppression of the putrid fermentation was complete."—(*Medical Press and Circular.*)

"*Dust and Disease.*—Mr. Tyndall's latest lecture on this, his favorite topic, is reported at length in *Nature.* We make the following extract in regard to the protection afforded by cotton-wool against those forms of evil which are inhaled with the air we breathe :

"'Once, then, established within the body, this evil form of life, if you will allow me to call it so, must run its course. Medicine, as yet, is powerless to arrest its progress, and the great point to be aimed at is to prevent its access to the body. It was with this thought in my mind that I ventured to recommend, more than a year ago, the use of cotton-wool respirators in infectious places. I would here repeat my belief in their efficacy if properly constructed. But I do not wish to prejudice the use of these respirators in the minds of its opponents by connecting them indissolubly with the germ-theory. There are too many trades in England where life is shortened and rendered miserable by the introduction into the lungs of matters which might be kept out of them. Dr. Greenhow has shown the stony grit deposited in the lungs of stone-cutters. The black lung of colliers is another case in point. In fact, a hundred obvious cases might be cited, and others that are not obvious might be added to them. We should not, for example, think that printing implied labors where the use of cotton-wool respirators might come into play; but I am told that the dust arising from the sorting of the type is very destructive of health. I went some time ago into a manufactory in one of our large towns, where iron vessels are enameled by coating them with a mineral powder, and subjecting them to a heat sufficient to fuse the powder. The organization of the establishment was excellent, and one thing only was needed to make it faultless. In a large room a number of women were engaged covering the vessels. The air was laden with the fine dust, and their faces appeared as white and bloodless as the powder with which they worked. By the use of cotton-wool respirators, these women might be caused to breathe air more free from suspended matters than that of the open street. Over a year ago I was written to by a Lancashire seedsman, who stated that during the seed-season of each year his men suffered horribly from irritation and fever, so that many of them left his service. He asked me could I help him, and I gave him my advice. At the conclusion of the season this year he wrote to me that he had simply folded a little cotton-wool in muslin, and tied it in front of the mouth; and that he had passed through the season in comfort, and without a single complaint from one of his men.'"—(*New York Medical Journal.*)

Artificial Respiration in Suspended Animation.—"In Bain's method the patient is laid upon his back on a table, and the operator standing at the head pulls the shoulders horizontally towards him with a certain degree of power, placing for this purpose the fingers of each hand in the axilla, in their front aspect with the thumbs on the clavicles. In Pacini's method the patient and operator are in the same relative position, but the operator takes hold of the arms of the patient behind, and close to the armpit, while the thumb is in front of the head of the humerus. He then pulls both shoulders towards him, and lifts them in a perpendicular direction, by which means the sternum is first raised by means of the clavicle, and, in consequence, the ribs, which, diminishing their obliquity to the spine, enlarge the thoracic cavity both in its transverse and antero-posterior diameters. A committee of the Medico-Chirurgical Society report that by either plan, as also by Dr. Silvester's, of which they are merely modifications, a sufficiently large quantity of air is without difficulty introduced into the chest."—(*Braithwaite's Retrospect.*)

Salts transported by Electrical Discharge.—"Dr. Becquerel treats of some phenomena observed while experimenting on the effect of only moderately strong electrical discharges when certain chemical compounds are placed in the route of the electric current. As results from these experiments, the author finds that the under-mentioned salts and other chemicals are transported by electrical discharges in the direction from the negative electrode to the positive electrode, but not again the reverse way. These salts and substances are ferricyanide of potassium, bichromate of potassa, chloride of barium, chloride of sodium, chloride of potassium, sulphuric acid, phosphoric acid, chloride of ammonium, and protochloride of iron. The following are among the substances which are not transported by any electric current, whatever its direction: chloride of cobalt, chloride of platinum, nitrate of silver, caustic potassa, and sulphate of potassa."—(*Comptes Rendus* and *Chem. News.*)

"*Chemical Nature of Tannic Acid.*—Dr. Hugo Schiff (*Journ. Applied Chemistry*) recently presented to the Chemical Society of Berlin a paper upon the properties and composition of tannic acid, and brought forward some novel features. The subject of the true nature of tannic acid has occupied chemists for a long time. It is evident that crude tannic acid contains glucose, and that this is not an accidental mixture. Some chemists class tannin among the sugars, while others deny its claim to such a position, and hence the question, 'What is the true nature of tannic acid?' still remains unsolved. Dr. Schiff thinks he has settled the point, by removing all the sugar, then transforming the tannin into gallic acid, and afterward reconverting it into tannic acid. He says that tannic acid is the anhydrous alcohol of gallic acid, and that the least purified tannic acid is the best. If we know the true chemical nature of tannic acid, some method may be devised of preventing this change into gallic acid, and thus be enabled to make extracts of bark in the forests that will bear transportation and preservation any length of time; hence the value of the purely theoretical observations of this author."—(*Med. Record.*)

"*Tungstic Glue.*—Tungstic glue bids fair to be an acceptable substitute for hard india-rubber, now so high in price. It is prepared by mixing a thick solution of glue with tungstate of soda and hydrochloric acid, by means of which a compound of tungstic acid and glue is precipitated, which, at a temperature of 86 to 104 Fahrenheit, is sufficiently elastic to admit of being drawn out into very thin sheets. On cooling, this mass becomes solid and brittle, and on being heated is again soft and plastic. This new compound, it is said, can be used for all the purposes to which hard rubber is adapted."—(*Phila. Ledger.*)

"*Testing by means of the Blowpipe.* F. Jean.—The author states that sulphuret of sodium is one of the best blowpipe tests, if used in the following manner: first, a bead is made with borax and the substance to be tested, and this bead, having been made very fluid within the reduction-flame, there is added to it some dry and pulverized polysulphuret of sodium, and the bead again heated in the reduction-flame. If the substance under investigation can form a sulpho-acid, there will be formed a soluble sulpho-salt and a clear bead; but when no such salt can be formed, with lead, for instance, an opaque bead will be formed.

Iron, lead, bismuth, nickel, cobalt, palladium, thallium, silver, copper, uranium, etc., fused in a bead of borax, to which, afterwards, sulphuret of sodium is added, will yield a black or brown-colored opaque bead; zinc yields a white opaque bead; cadmium, while yet hot, scarlet-red, and yellow after cooling; manganese, a dirty chestnut brown; gold and platinum, a clear, transparent, mahogany-brown bead; tin, a clear, transparent, yellowish-brown bead; chromium, a green bead; arsenic and antimony, colorless clear beads; vanadium and iridium, blood-red beads; a slight excess of the sulphuret of sodium is required, and the bead should be heated carefully, but steadily, and with a good blast in the reduction-flame."—(*Moniteur Scientifique* and *Chem. News.*)

"*Size of Liquid Drops.*—Quincke, of Berlin, has found that the size of drops bears a fixed relation to the chemical composition of the liquid. He has proved experimentally that all liquids, at a temperature near their liquefying point, have specific cohesions, which are proportionate to the numbers 1, 2, 3, 4, etc. Taking the specific cohesion of the metallic bromides and iodides as 1; that of mercury, the nitrates, the metallic chlorides, the sugars, and the fats will be 2; that of water, the carbonates, the sulphates will be 4. In the case of the metals (referred to the same standard), the specific cohesion of lead, bismuth, and antimony is 2; that of platinum, gold, silver, cadmium, tin, and copper is 4; that of zinc, iron, and palladium 6; that of sodium, 12."—(*Jour. Applied Chem.*)

Silvering.—"A preparation is sold to the workmen in brass and copper, for the purpose of silvering without electricity or without heat. From ten to fifteen grains of nitrate of silver are dissolved in a little water, and a few pieces of cyanide of potassium, sufficient to dissolve the precipitate first produced, are added, with twenty drops of ammonia-water. This fluid is put into an eight-ounce bottle, and sufficient pulverized chalk and water added to fill up the bottle and bring the mixture to the proper consistency. For use, a little is poured on a rag, and the brass or copper, previously cleaned, rubbed with it, when it will be found nicely silvered."—(*Drug. Circ.*)

"*Coloring Metal.*—Dr. Puscher gives an account in Dingler's *Journal* of a process for obtaining decorative colors on metal. Hyposulphite of lead is dissolved in hyposulphite of soda. The clear solution is then heated to 212° Fahr., and the metal dipped into it, when a thin film of lead is deposited, producing a beautiful display of colors upon any metal employed."—(*Boston Jour. Chemistry.*)

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The Medical World. Edited by Reuben A. Vance, M.D. New York: Wm. Baldwin & Co., Publishers. $1.50 a year, in advance. This is a new monthly of professional literature, criticism, and news. The initial number looks well, and contains much useful information.

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ORIGINAL COMMUNICATIONS.

CELLS.

BY S. G. PERRY, D.D S., NEW YORK.

A Résumé read before the New York Odontological Society.

So much has been written about cells, and so many different terms introduced in describing them, and there seems to exist, in consequence, such vague conceptions as to what is really meant when the term "cell" is used, that it has seemed worth while to review the latest works on histology, in order to learn just what may be accepted as conclusive on the subject.

A few words first, however, in reference to spontaneous generation, in order to show the latest conclusions on the subject, and to point out an analogy that exists between the origin of minute organisms and the origin of cells.

About two hundred years ago, Redi, an Italian,—and a contemporary of Harvey,—advanced the idea that all life sprang from a pre-existing germ. He was led to this belief from observing that pieces of meat exposed to the air in hot weather soon became filled with living creatures, whereas, if the meat was protected by a fine wire gauze, no such result followed.

This simple experiment demonstrated that the eggs laid by the blow-flies were the germs from which these living organisms sprang. He naturally concluded that the production of life from dead matter was always due to the introduction of germs from without.

Previous to his experiments, belief in spontaneous generation had generally prevailed, and from that time down, even to the present day, there have been many able advocates for and against the doctrine.

As the microscope became perfected, the methods of observation became more refined, but the facts brought to light by the best instruments have not differed from those observed by the unassisted eye.

Recently the controversy has been revived by Dr. Bastian, of Lon-

don, who claims to have demonstrated that living matter can be evolved from non-living matter. He published, last summer, in *Nature*, a carefully prepared report of a series of experiments, that were so well performed as to at once attract the attention of the scientific world. If there had been no mistakes committed in any steps of the experiments, it seemed as if the startling fact of spontaneous generation was at last established.

In September following, Huxley, as President of the British Association, devoted the whole of his address to a consideration of the two opposing doctrines.

To the doctrine that life springs from a pre-existing germ he applied the term "Biogenesis," and to that of spontaneous generation the term "Abiogenesis." After carefully reviewing the whole subject, he ended by showing that the burden of proof was in favor of biogenesis,—in fact, that there was no positive proof of spontaneous generation ever having occurred, and that in Dr. Bastian's experiments there must have been some mistake.

After considerable controversy, in the form of letters, published in *Nature*, it was finally shown that Dr. Bastian had not heated his flasks to so high a temperature as he had supposed, so that evidently the germs were not destroyed. In flasks where this was done no life appeared, so that we may consider the question decided against spontaneous generation.

This becomes of greater interest when compared with some results attained in histology, viz., the derivation of cells from cells, or germinal matter from germinal matter, and the origin of certain diseases.

Of the latter, in the address before mentioned, Huxley says: "There is already strong evidence that some diseases of an extremely malignant and fatal character are the work of minute organisms;" and referring to Prof. Lister's antiseptic method of treatment, he says: "The deadly consequences of wounds are due to importation into them of minute organisms that rapidly multiply, and the surgeon who saves most lives will be he who best works out the practical consequences of the hypothesis of Redi."

And yet even so eminent a man as Prof. Owen still holds to the doctrine of spontaneous generation, maintaining that the formation of living beings out of inanimate matter, by the conversion of physical and chemical into vital modes of force, is a matter of daily and hourly occurrence.

But as this is merely a matter of belief, unsupported by proven fact, we must accept Huxley's negative statement as conclusive.

This brings us to a direct consideration of the doctrine of cells. In 1835 Johannes Müller advanced the doctrine that cells, spheroids, and granules were dependent on the vessels in which they float for origin

and growth. In this he believed them to differ from vegetable cells, which were supposed to have an independent existence.

In 1839 Schwann boldly asserted that animal and vegetable cells were identical, and that animal cells were not, therefore, dependent on the vessels for origin and growth. He contended that the vessels were concerned only in conveying and distributing them. Müller, as well as many other eminent histologists, immediately adopted this proposition. Also, in 1835, Dujardin had discovered in the lower animals a contractile substance capable of movement, to which he applied the term "Sarcode." Although destitute of nerves, irritability was ascribed to it, and, finally, it was admitted that a little mass of sarcode constituted a living and independent being.

Kölliker, from observing the changes of form of the colorless blood corpuscle, and of pigment cells, went a step further, and announced that the contents of cells were contractile. A little later Max Schultze demonstrated that the sarcode of Dujardin and the contents of animal cells were identical. For sarcode he substituted the term "protoplasm," which had been used before by Remak, and has since become associated with Huxley's name. This was in 1856. This discovery of the identity of the protoplasm of plants and sarcode of animals gave support to Schwann's doctrine that cells form the basis of the whole organized creation.

Schwann claimed that cells possess true cell walls that inclose fluid contents and a nucleus. When the membrane was not visible it was supposed to have burst, or was assumed to be present.

He did not, however, even then describe pus or mucous corpuscles as having an investing membrane, but considered them as rounded masses inclosing a nucleus, and this, agreeing, as it does, with the latest conclusions, testifies to the accuracy of his observations.

These views, claiming, as they did, the vesicular nature of cells, became very generally accepted. Max Schultze was the first to deny their accuracy. He denied the existence of cell walls inclosing fluid contents, and insisted on describing a cell as simply a little mass of protoplasm inclosing a nucleus. In defining a cell, he says: "The protoplasm is no further isolated from external objects than by the circumstance that it will not combine with the surrounding medium, and that it constitutes, with the nucleus, a single whole. A distinct membrane may, indeed, appear on the surface, formed by the conversion of the outer layer of the protoplasm; but then it must be allowed to be an early indication of a retrograde process. A cell invested by such a membrane can no longer divide,—that is a power possessed by the inclosed protoplasm alone. A cell, with a membrane differentiated in its chemical characters from the inclosed protoplasm, is like an encysted infusorial animalcule."

Brücke, accepting Schultze's proposition, went a step further, and claimed that even a nucleus was not necessary in the conception of a cell, as in the cryptogamia cells occur in which no nucleus is visible. This opinion is confirmed by Stricker, who says, in his work on histology, just published, and which contains the results of the latest German investigations: "If we wish to be logical we must exclude the nucleus as an unnecessary factor in the ideal type of an elementary organism. We must in future apply the histological term cell to the morphological elements of the higher animals, or to independent living organisms, even if we are unable to discern anything more in their structure than that they are little masses of animal sarcode or protoplasm."

He further says: "I have shown that little masses of protoplasm, destitute of nuclei, which might be presumed to be the remains of cells, may still present some of the phenomena of life. I also now know that in other places where many young cells are collected together, fragments or minute separated particles occur about the size of a nucleolus, which, if they become attached to the slide, sometimes exhibit very lively movements, and this especially if the object-plate be warmed to from 68° to 70° Fahr. May we now, in consequence of our new definition, consider these little masses as cells? and shall we be justified in giving this name to all the minute particles which, when armed with instruments of still greater penetration, we may be able to perceive and find capable of spontaneous movements? In the present state of our knowledge we shall certainly reply in the negative. We shall continue to regard such minute masses as living or organized matter without reference to their size, so long as the optical means of research at our disposal do not permit us to make the observations necessary for a different statement. We cannot, however, term these masses cells, any more than we can apply the name of the whole animal to the excised heart of a tortoise. In order that we should apply the term 'cell' to such an isolated fragment of living substance, it is necessary that we should recognize the whole group of phenomena which are characteristic of an independent animal—an independent organism."

This brings us down to the present time, and to a consideration of the subject as held by the German histologists. According to them, we have, then, as a final definition of a cell, that it is a little mass of protoplasm, having no cell wall, and sometimes even without a nucleus. It is a living substance, capable of spontaneous movement, nutrition, and growth, and capable of propagating its like. It is homogeneous, and destitute of structure. It rarely occurs in a pure state, generally having particles imbedded in it, which have been taken up from without, or have formed in the interior as a consequence of chemical processes. If it contain many colored particles, it is called a pigment cell; if fat molecules, a fat or granule cell.

Its growth is by proliferation, and consists of two separate processes, —the growth of the mother cell, and the detachment of the daughter cell.

Its spontaneous movements are of two kinds—a dancing movement of its molecules, which occurs when the cell is stationary and spherical, and a change of form, or protrusion of its parts, known as the amœboid movement, and which is never attended by a dancing motion of its molecules.

Stricker infers that changes in form indicate a living cell, whereas the vibration of its molecules is a kind of molecular motion dependent on its death.

In their movements living cells show changes of form, or protrusion of processes, which either drag the rest of the body after them, or are withdrawn. In this manner they can "wander."

Stricker says: "Pus corpuscles are not always generated where they are found, for they can migrate even into the meshes of a dead cornea;" and he further says: "Cohnheim has also very recently demonstrated that the colorless corpuscle can leave the vessels, and migrate, and that there may be a transplantation of living cells from one organ into another, and from one region of the body to another, and this fact furnishes us with information the importance of which cannot at present be estimated."

Temperature has a great influence on the growth, as well as movement, of cells. If elevated or lowered beyond certain limits, their life is imperiled. The eggs of trout, for instance, undergo segmentation rapidly in ice-water, but die in a warm room; whereas, in treating of the migration of cells, Max Schultze has shown that the white blood corpuscle can effect considerable locomotion at a temperature of 100° to 104° Fahr.

As to structure, Stricker says it is impossible to discern any differentiation of parts in the protoplasm of cells, and what has been considered a cell wall is the periphery hardened by contact with the medium in which it floats. The absence of a double contour line in an uninjured cell is sufficient to prove this.

Of the nucleus he says: "Since Brown discovered it in the vegetable cell, in 1833, no remarkable advance has been made in definite knowledge of it."

Bear this in mind, if you will, for we shall give Beale's theory regarding it, showing how entirely he differs from Stricker in this particular. Beale's explanation of it Stricker characterizes as a plausible, but only negative, explanation of its significance.

Schwann held that the development of cells was due to the nucleus, but this we know was an error, for, as has been shown, non-nucleated cells are capable of budding and producing their own kind.

Stricker distinctly says that "at present nothing is known with cer-

tainty respecting its physiological significance, nor regarding its physical peculiarities." He thinks there is no evidence to prove its vesicular nature, and he observes that it would be impossible to conceive how the process of budding could occur in a vesicle inclosed by a membrane. And of the nucleolus he says there is still less known than of the nucleus.

Of the genesis of cells he says: "Virchow's statement made in 1855, 'all cells from cells,' must be accepted as the basis of the present cell doctrine."

In this connection we would recall the results attained by the latest investigations of spontaneous generation, in order to point out the analogy between conclusions arrived at by two distinct lines of research.

We see by this that an organism can only spring from a living germ, and a cell from a living cell, so that all life upon the planet is connected and continuous.

According to Stricker, cells multiply in three ways, viz., by fission, or division of the nucleus, followed by a division of the whole cell; by germination, or budding, when a little portion of the cell projects, drops off, and grows to form a new cell; or by an endogenous mode, when the cell originates like an embryo in the interior of the mother cell. No direct observations have been made as to how the daughter cell is set free from the body of the mother cell.

The essential feature of all cell multiplication consists in the capacity of assimilating new material. In an appended note Stricker says: "My later investigations have shown that the process of the division of pus cells can be directly observed under the microscope, and that the proliferation of the cells of connective tissue by division, and of those of the epithelium by endogenous generation, are facts which cannot be disputed." And finally, he says: "The recognition of the fact that the animal body, exclusive of the ingesta, consists only of cells, or cell derivatives, constitutes one of the most valuable conclusions arrived at by Schwann."

This is a brief résumé of the cell doctrine as held by the German school of histologists at the present time.

Dr. Beale, while admitting much that is held by Stricker, yet differs from him in some very important particulars, and so plausible has been his reasoning that his theory seems to have been generally accepted in this country and in England, though considered of little importance, as we have seen, in Germany.

According to him the cell is composed of matter in two states, viz., that which is forming, and that which is formed; the former being called germinal matter, and having the power of growing and producing its like out of pabulum or food, and the latter, called formed material, having no such power, but resulting from the death of the forming matter.

The germinal matter is soft, transparent, and structureless, and central in its situation, constituting what is called by other writers nucleus, cell contents, endoplast.

The formed material is peripheral, and includes what is known as cell wall, periplast, intercellular substance.

Germinal matter is active, growing and moving through some inherent power of its own, and capable of producing its like by budding, or dropping off a portion of itself, which portion immediately assumes an independent existence. Germinal matter is capable of being stained with carmine, and the younger the matter the darker the stain. According to this the nucleus, being a new centre of growth, stains dark, and the nucleolus, being still a younger centre, stains darker still.

Formed material, being dead, is always passive, and can increase only from the death of the germinal matter, and in direction from the periphery inward. It possesses different properties in different situations, being contractile in muscular tissue, protective in epithelium, and exhibiting neurility in the nerves.

Increase of cells is due to division, each cell coming from the germinal matter of a pre-existing cell. On this subject of the origin and growth of cells there seems to be a perfect agreement among most writers, a result quite in accordance with what has been shown on the subject of spontaneous generation. Applying this theory to disease, Beale considers inflammatory processes attended with the production of pus or lymph, and tuberculous and cancerous deposits, due to an excess of the nutrient pabulum of germinal matter, while cirrhosis is dependent on a deficiency of pabulum. He considers that suppuration occurs by the germinal matter accumulating in a part, and giving out buds, or processes, that drop off and form pus corpuscles. These are formed so rapidly that no time is given for formed material to form upon the surface, so that they are never developed into the tissue they were intended to form.

[The success recently attained in surgery in healing indolent ulcers by transplantation of tissue would seem to give support to this theory. At first a portion of skin was placed in the centre of the ulcer and retained until a new centre of growth was established, but now it is proven that fresh epithelial scales sprinkled over the surface insures the same result. It seems, then, as if the formed material of the epithelial scales is needed to retain the exuding germinal matter until its organization takes place.]

We see that Beale considers pus corpuscles as almost pure germinal matter, and constituting the material of which new tissues are formed.

These are his views as put forth in his book called "Protoplasm, or Life, Matter, Mind."

Huxley, in his celebrated lecture on the "Physical Basis of Life," says: "A nucleated mass of protoplasm turns out to be what may be termed the structural unit of the human body. The nucleus may be more or less hidden while the cell is living, but becomes distinct after its death." Differing from Beale, and agreeing more nearly with Stricker, he goes even further down the scale than the cell, and says: "All the phenomena of life are manifested by a particle of protoplasm without a nucleus."

The foregoing presents the views of the most eminent observers, if we have apprehended them correctly.

Tyson, of Philadelphia, in his admirable work on the "Cell Doctrine," recently published, and from which we have derived many of the facts here stated, accepts the doctrines of Beale, with some few modifications, as more fully explaining the observed facts than any other theory yet advanced. He differs from Beale in not considering formed material dead, since it alone is endowed with function, as that of contractility in the muscles, neurility in the nerves, etc.

He only admits that it is dead in so far as the power of growing and reproducing its like is concerned. He therefore suggests substituting for formed material the term "non-germinal matter."

The proportions of germinal and non-germinal matter he considers as various, being almost pure germinal matter in the amœba, white blood, pus, and mucous corpuscle, and in the old epithelial cell all formed material except a small point of germinal matter,—the nucleus, and pure, structureless, formed material in the red blood disk,—which, however, is not by any means dead.

This conception that the red blood corpuscle consists of formed material quite agrees with the belief that has for some time obtained, that it is a cell undergoing a retrograde metamorphosis.

Other writers hold views on some points entirely at variance with what has been described here, as Robin, of Paris, inclines toward belief in the spontaneous generation of cells, and Richardson, of Philadelphia, in his work on "Medical Microscopy," claims to have demonstrated the vesicular nature of the red, and even the white, blood corpuscle!

After carefully searching the literature of the subject, we feel justified in concluding, finally, that the most reliable histologists agree in believing:

1st. That all cells originate from pre-existing cells, their mode of development being by division, either of the nucleus and the cell, or of portions of the cell.

2d. That cells consist of protoplasm, have an independent existence, and constitute the morphological element of the tissues of plants and animals.

3d. That they have no true cell wall.

More than this it seems unsafe to assert, owing to the lack of agreement of the writers quoted. Beale's theory as to germinal and formed matter, his explanation of the nucleus, etc., is certainly ingenious, but we must remember that Stricker rejects it, and says distinctly that nothing is positively known of the nature of the nucleus, or of its relation to the cell.

INFLUENCE EXERTED BY ANTAGONIZING TEETH IN THE MAINTENANCE OF DENTAL IRREGULARITY.

BY J. H. M'QUILLEN, M.D., D.D.S.,
PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

The influence exercised by the lower incisors in maintaining a false position of the superior incisors, when the latter strike inside of the former, has been noticed by every one who has paid any attention to the subject; and the fact is fully recognized that the first indication in attempting to correct the difficulty is to prevent the unnatural occlusion, as all efforts to bring them into their proper position would otherwise prove unavailing.

Judging from some cases, however, that have come under my observation, in which efforts had been made to correct a malposition of the superior canines by extracting the neighboring bicuspids, it would seem that the direction and influence of the force exerted by the inferior antagonizing bicuspids had not been sufficiently considered or perhaps not even thought of.

For instance, when the superior canines project outside of the arch, not unlike tusks, and the other teeth are very much crowded, owing to the small size of the jaws, it was formerly the invariable practice to extract the neighboring bicuspids to secure sufficient room for the canine to fall into position. In many cases this course was not only unwarrantable but decidedly reprehensible practice, from the fact that valuable teeth were frequently and uselessly sacrificed. This has been proved by the introduction of improved appliances for enlarging the arch in other cases, gaining thereby sufficient room for the canines to fall into proper position without the loss of a single bicuspid.

In some instances, however, the necessity of sacrificing the bicuspids is imperative, and it is to just such cases that attention is now invited, as it becomes a matter of question frequently under such circumstances to decide whether the first or second bicuspids should be removed to secure the desired room. The usual practice advised and followed is to extract the second bicuspids, under the impression that ample room can be obtained, and without a V-shaped space (with the base toward the gum, favoring the retention of food) being formed between the canine and second bicuspid, as, is asserted, is apt to be the case after the removal of the first bicuspids.

On examining the articulation of a perfect and regular set of natural teeth, it will be found that the teeth of the upper and lower jaw are arranged in such a manner that, owing to the difference in size, the superior incisors and canines, when the jaws are closed, lap over the upper third of the anterior surface of the inferior incisors, canines, and half of the first bicuspids, while the crowns of the first superior bicuspids antagonize with the posterior half of the first and the anterior half of the second inferior bicuspids. This peculiar antagonism of the crowns of the bicuspids is continued to the molars, so that "no two teeth oppose each other only, but each tooth, in closing the jaws, impinges upon two; so that, should a tooth be lost, or even two alternate teeth, still the corresponding teeth of the opposite jaw are to some extent opposed, and thus remain useful. For when a tooth is wholly unopposed, a process is set up in the jaw by which the useless organ is gradually ejected."*

This order of antagonism is, of course, materially modified in irregular dentures, particularly when the superior canines are outside of the arch, and the first bicuspids are in close proximity to the lateral incisors. In such a state of affairs the inferior first bicuspids will be found impinging on the posterior half of the first and the anterior half of the second superior bicuspids, and, as in closing the lower jaw, the direction of the force being upward and forward, the shock of occlusion tends to maintain the irregularity, even after the removal of the second bicuspids. The influence of this shock can be properly estimated by referring to cases where bicuspids or molars have been driven into the most peculiar positions, after the loss of adjoining teeth, by the direction of the force exerted by the antagonizing organs.

The importance of taking this matter into consideration in deciding upon the question must be conceded, and where the occlusion of the bicuspids is such as to maintain the irregularity by driving the first superior bicuspid forward, those teeth should be removed in preference to the second bicuspids.

GUILLOIS'S CEMENT.

BY C. VICTOR DU BOUCHET, PARIS, FRANCE.

ALTHOUGH I have more faith in gold foil for saving teeth than anything else I know of, and my use of the cement referred to being chiefly experimental, yet I feel that it approaches perfection nearer than anything of its class at the present day.

To secure the best results from its use, the same care must be employed to keep the cavity perfectly dry as if the filling were to be of

* Dental Physiology and Surgery, by John Tomes, p. 19.

adhesive gold; a drop of saliva is fatal. The use of the rubber dam is as essential as with any other filling. There is doubtless a tendency on the part of many to slight operations performed with what are considered inferior materials, and thus the materials themselves are brought into disrepute.

The use of this cement dates from 1856. It has been in the market for some time in the shape of imitation coral sleeve-buttons, studs, earrings, and other fancy articles.

I have seen fillings of it upon the grinding surfaces of molars which had been placed there ten years previous. Evidences of wear were present; but, otherwise, that which remained of the filling was quite hard and bony, adhering firmly to the walls of the cavities.

It is one of the best non-conductors in teeth sensitive to thermal changes, clings to the walls of cavities with great tenacity, filling thoroughly every inequality, and preserving the tooth, without doubt, from further decay.

The manufacturer, who is enthusiastic about it, says that it will last fifteen years in favorable cases, and guarantees it eight when employed at the proper consistency, though, as he justly remarks, there are mouths in which it appears to disintegrate, on account of an acid condition of the saliva.

After the cavity is prepared by thorough excavation, though it is not necessary to shape as carefully as for gold fillings, place a little more of the powder upon a glass slab than is absolutely necessary, and near it a drop of the liquid; then mix into as *stiff a paste as possible* by means of a small platina spatula, and with which place a small quantity in the cavity, pressing it into all parts with a small inverted cone-drill; then fill the rest of the cavity with care, and allow a small surplus to bulge out, overlapping the edges of the cavity; then dry the filling with bibulous paper, varnish, and leave for another sitting, at which time trim with chisel, and polish somewhat, by means of tape and then buckskin; or, before the filling has entirely hardened, pass a burnisher over the surface lightly a number of times, taking care not to disturb the setting; this makes the surface quite dense, and leaves it in a better condition to resist the saliva; then varnish. By means of these precautions the material has a chance of becoming extremely hard before the coat of varnish has worn away, leaving it exposed to the fluids of the mouth,—its only enemies in these cases. I have reference to cavities in the incisors, either approximal or labial. It is in such cases, where, owing to the frailty of the tooth or size of the cavity, it would be almost impossible to make a satisfactory operation with gold to the patient, that such fillings are valuable. The Parisians, moreover, and particularly the Parisiennes, object to any outward evidence of the tooth having been filled with gold, thinking that such exhibition of metal may lead persons to believe that artificial teeth are worn.

There are several other ways of making substantial operations with this material, as, filling against the labial wall, or, in fact, any thin wall of the teeth, as far back as the second bicuspid, with this composition, and, when hard, excavating as desired and inserting metallic filling; or, in very large cavities of molars, when the pulp is nearly exposed or slightly covered with softened dentine, to fill the cavity at least two-thirds with this cement, allowing it to line the walls, but not up to the margins; then shape as desired, and fill with gold or a reliable amalgam. Another method is that of inlaying thin plates of porcelain in labial cavities exposed to sight.

As to its effect upon the pulp of the tooth, I am unable to speak positively. My belief, however, is that in the *majority* of cases the pulp is unable to combat the action of the escharotic, and falls into a sleep from which there is no awakening, and giving no further trouble. I have witnessed this in a number of cases; and, if it were possible to insure this result uniformly, I would prefer it to extirpation of the pulp.

It is urged by those gentlemen "who use nothing but gold" that this will debase the profession, as vulcanite has done, for any mere tyro can putty up teeth. To this I would reply,—use it with discrimination; a *good* filling is one which *saves* the tooth.

For prudence' sake, where the filling is to be all osteoplastic, we place it in the cavity with the condition to renew in a few years, if needed, not feeling sure about it; considering this better than to make an unsightly or doubtful operation with gold in exposed cavities.

A DIFFICULT CASE TO DIAGNOSE.

BY J. S. SMITH, D.D.S., COLUMBIA, PA.

A GENTLEMAN, aged thirty-seven years, of sanguino-lymphatic temperament, applied to have the roots of a molar tooth removed which had been previously broken off. The pain was not confined to the parts about the tooth, but was more about the region of the eye and the roof of the mouth. He stated that he had suffered for a long time at intervals from a large lump or growth which was occupying the mouth. Upon examination, I discovered a large sac, closely resembling a hard growth, within the palatine arch. This protuberance extended downward, at its greatest depth, at least three-eighths of an inch, gradually tapering off to the median line and nearly back to the roots of the broken-down molar,—occupying nearly the entire region of the palatine arch on the right side. Upon inquiry as to the length of time the mouth had been in this condition, the patient was unable to give the exact time, but thought it was at least two and a half years. Did not remember of having any pain at the time it made its appearance, but it had opened and discharged at intervals.

At this time, however, the opening had closed, and the pent-up pus which filled the sac caused the intense pain from which the patient was driven to seek relief. In the examination for pus, it was only by the most *acute* sense of touch that a slight fluctuation could be detected, owing, in part, to the density of the fibrous tissue of the parts, and from the fact that the pus was close to the palatine process.

The fluctuation being a sufficient sign that suppuration had taken place, the next step was to ascertain the exact location of the cause of the abscess. Upon examination of the teeth, with the exception of the broken-down molar previously alluded to, all were free from caries. The teeth were closely set, crowns short, and of the *dense yellow group.*

A careful examination was made for dead teeth, but from the fact that the patient was a confirmed tobacco consumer, the teeth all appeared to be of one color, which baffled me in detecting the living from the dead. Percussion was resorted to, but pain was felt in all to the same degree.

These means having failed to single out the offending organ, free incision beneath the gum, at the neck of each tooth, revealed the one that was not sensitive under the instrument. An opening was then made with a spur-shaped drill through the lingual portion of the right lateral incisor (as it proved to be the offending organ) into the pulp canal, emitting, upon the withdrawal of the instrument, a very offensive leaden-colored fluid. Deeming the opening of not sufficient size for the complete draining of the cavity or sac, the tooth was at once removed. The cavity was now probed for dead bone by introducing the instrument through the socket; but no dead bone could be felt. The cavity was washed out with tepid water, and a dressing of diluted tincture of iodine injected, and the case dismissed; with directions to keep the orifice open, and return in a few days. Water was again thrown into the cavity, the dressing of diluted iodine repeated, and the patient directed to keep the alveolar cavity open until the parts would regain their normal condition by reunion.

By this treatment—Nature doing her part—the patient is now well, The disease had commenced to tell upon his nervous system and general health. He underwent much unnecessary suffering for want of timely relief. Frightened by the opinion, which was given by a dentist *who professed to know*, that the *abscess* was a "dangerous growth that must be removed," and not feeling competent to act upon his judgment, the case was allowed to linger until the pain forced the patient to me for treatment.

The most careful may make an error in diagnosis; but "haste should be made slowly" at all times before giving an opinion, especially to a patient. Supposition or guess-work should never be substituted for *facts* based upon scientific principles to guide the judgment in making a diagnosis. If guessing is to take the place of reason, the diagnosis made may always be incorrect, and conservative dentistry be a failure.

ARRESTING HEMORRHAGE AFTER EXTRACTION.

BY F. M. SHIELDS, M.D., SACRAMENTO, CAL.

Doubtless all have observed the increasing hardness of the sandarac caps placed in carious teeth over arsenical applications for destroying the pulp. These are composed of cotton pellets dipped in sandarac varnish. As soon as the saliva comes in contact with the varnish and cotton they are condensed, and the excess of varnish is converted into white shreddy strings.

The idea occurred to me some time ago that if a pellet of thin cotton saturated with varnish were introduced and held for a moment in a socket from which a tooth fang had been removed, the bleeding could be at once arrested. Being desirous, however, of promoting the bleeding in ordinary cases, rather than of arresting it, I had no opportunity of making a practical test for some time.

Recently I extracted the lower right first molar from the jaw of a robust mountain girl, aged sixteen years. About six hours afterward she returned to the offic weak and faint from the loss of blood. The bleeding had been profuse and without interruption since the operation.

I will not call the case an obstinate one, from the fact that it yielded at once to the applications for arresting the hemorrhage. But this I know, that the bleeding proceeded from a vessel too large to be closed by astringent applications. I prepared a small pellet of cotton and saturated it with perchloride of iron, and a large one (larger than a quail's egg) saturated with sandarac varnish. The small one was placed in the cavity, and then the whole space between the teeth and to the bottom of the socket was at once filled with the large one. I used no instrument but my thumb and fingers, with these pressing it down well and leaving it on a level with the grinding surfaces of the adjoining teeth. The hemorrhage was arrested in a very few minutes, and did not return.

I directed the patient to keep quiet and cool, and to sleep with the head and shoulders in a half-recumbent position, and avoid eating hard food that might displace the application.

The *modus operandi* in this case was simply mechanical. Its superiority consists—1st, in the softness of the pellet, which is retained while the application is being made, and which adapts it to the parts, whether deep into the socket or farther up around the edge of the alveolar process or the bleeding gums; 2d, the immediate, partial, and growing solidity by which it retains its place wherever it is fixed; 3d, the easy application, relieving the dentist from the necessity of taking impressions and fitting appliances, and the patient from the pain and fatigue of these tedious and painful operations; and 4th, the loss of blood and tissue saved by the shortness of time required to make the application.

THE CELLULOID BASE.

BY PRETERRE BROTHERS, NEW YORK.

When we commenced a series of experiments with the celluloid base, one of the objects that we had in view was the removal of the taste and odor of camphor. We have arrived at that desired result by the following process:

Immerse it in 95° alcohol for not less than four days; at the end of that time it will have swelled and have become soft, but the alcohol will not dissolve it; and, as far as our experience of six weeks enables us to judge, it can remain in it any length of time without injury. Take it out of the alcohol and place it in a warm, dry place (a water-bath or Dr. J. A. McClelland's evaporator is a good apparatus for this purpose), where it must remain until the odor of the alcohol and camphor has passed off and it has become dry. It will be found to have shrunk and warped considerably, but will be free from the taste or smell of camphor. When dry it is ready to be moulded into plates by either of the processes described by us in the July number of the Dental Cosmos, and which description was subsequently copied into the advertising pages of the pamphlet recently published by S. S. White, entitled *Taking Impressions of the Mouth.* Either of them is superior to hot oil.

The celluloid, after being treated by alcohol and dried as described, will be much TOUGHER than it was before being subjected to that process, which we consider is another important point gained.

FIRM ALVEOLAR ATTACHMENT.

BY JOHN D. M'KELLAR, MACON, GA.

I inclose with this communication one of the most remarkable alveolar attachments which I have ever seen. The patient from whom this tooth—a right superior molar—was extracted was a young lady, nineteen years of age, of a robust habit, and a very healthy diathesis. Her teeth were all decayed, and I had extracted every tooth in her upper jaw with but little difficulty until I reached this one. I found it impossible to dislocate it from the alveolus without the use of the knife. Had I attempted to remove it with the forceps I would most assuredly have brought away at least a third of the superior maxilla and the floor of the maxillary sinus. The knife I used was hatchet-shaped, and representing, also, the shape of a large old-fashioned gum lancet. I first made an incision, one-third of an inch deep, from the posterior to the anterior palatine surface; then made the same cut on the buccal surface of the alveolus, and, rounding the incision anteriorly and posteriorly, I

was enabled to loosen the tooth so as to remove it with a pair of curved bicuspid forceps. I send it as a curiosity, and have described my mode of extracting it, thinking it might be of service to the young practitioner. I cannot here close this without expressing the estimate I place upon the skillful use of the knife. In cases of difficult extraction, it is worth all the forceps when skillfully handled.

OS-ARTIFICIEL.

BY A. W. HARLAN, CHICAGO, ILLINOIS.

In response to the call for statistics in regard to this very valuable agent in saving exposed pulps, I lay before the readers of the Dental Cosmos the subjoined statement of cases, of which I have kept record during the past two years.

In fifty-one cases where the pulp was entirely exposed, I have treated and filled in the usual manner, *always* leaving the os-artificiel in the tooth for a period of six months before attempting to refill with any other material. At the end of that time, in forty-nine cases, the pulp was found in a sound and healthy condition. I have refilled all of them, and they are doing well, without exception. I think that this pretty clearly demonstrates the value of this agent to the dentist. I have filled a still greater number than this, from which I expect equally good results. If the writing of this short article shall induce any of my professional brethren to stop killing "nerves," I shall be amply repaid.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

Dental Times.

Dr. L. D. Walter relates the following case of "Replanting Teeth:"

"A little girl in average health, about thirteen years of age, fainted, and, falling on the floor, dislodged her two superior incisors. She was picked up, removed to her room, and the family physician called to attend her. Her suffering was but temporary, and all anxiety soon subsided. Hearing accidentally of the child's misfortune, I sent to learn if the teeth had been preserved. Receiving an affirmative answer, I proposed that the teeth be reinserted, to which the parents gave their assent. Success in this case was, to my mind, doubtful, as the teeth were perfectly dry and had been out of place fifteen hours.

"However, the teeth were thoroughly cleaned, and, after the alveoli had been syringed with tepid water, inserted, and held in position by means of the fingers for about twenty minutes. The crowns were then capped with sheet tin and this bound by means of fine wire to the adjoining laterals.

"The appliance was kept in position one month, and then removed. In the mean time a suitable mouth wash was used several times daily, to reduce the inflammation. The teeth are now, apparently, as firm and healthy as ever. They are not at all decayed, and the color does not indicate death of the pulp. The above operation was performed eleven months ago."

DENTAL REGISTER.

Dr. Watt, writing upon the "Physiology of Thought," makes some consolatory suggestions for those who are not as well as they would like to be:

"A constitution which readily assimilates carbon, hydrogen, and nitrogen may give wonderful manifestations of what we usually call physical strength, provided it also appropriates enough of the other essential elements to keep up a reasonable balance; but it is not common for such to manifest great depth of thought. On the other hand, there may be a lack of ability to properly assimilate these elements, with an extraordinary power to appropriate phosphorus. Such a constitution will, if not greatly unbalanced, show great mental power, with a corresponding lack of physical force and energy. Who cannot recall the memory of his schoolboy days, when the hero of the play-ground and the pet of the class-room were very different boys?

"In all departments of society, unbalanced constitutions do the deepest thinking. Not that all such are good thinkers; but only those who overbuild the nervous tissue, by assimilating phosphorus, etc., till the muscular and secretory systems are overtopped.

"Notable examples might be referred to: among poets, Milton, blind; Hood, organic disease of heart, lungs, with nearly constant rheumatism; Cowper—too sad to tell all his ills; Pope, Kirke White. In linguistic lore, what writer of English fails to feel the force of Lindley Murray, an invalid, bedfast for forty years,—all his writing done in bed? Did John Calvin, the invalid, make himself felt in the religious sentiment of the world? Scott, the cripple, wrote good poetry and readable novels. James Watt, the victim of neuralgia and sick-headache, made fair steam-engines. Dr. Kane, traveling for his health, widened the field of knowledge. 'Stonewall' Jackson, the sickly professor, was something of a fighter. Alex. H. Stephens, not strong enough to draw his last breath, but will die with an expiration, possesses some legal lore. Thad. Stevens, the scrofulous cripple, was something of a statesman.

"But the time would fail me to tell of Johnson, of Webster, of Harvey, of Wilson, of Æsop, of Cartwright, of Prentiss, and others, whose thoughts we cherish as household jewels. Suffice it to say that in our own profession, for a dozen years at least, the leaders of thought, and the advance guard of professional progress, have been men with badly balanced and defective constitutions. When the physiology of thought is understood, this is not strange—not more strange than that the English racer can outrun the roadster."

AMERICAN JOURNAL OF DENTAL SCIENCE.

Dr. H. D. Boyd relates a case of disease of the "Antrum:"

"Sept. 1st, 1871, Annie Y., aged thirty, called on me to have a tooth extracted. On examination, I found the mouth generally in a wretched

condition, all of the upper teeth decayed near by to the gums, but not entirely gone, face and head giving general pain, right cheek slightly swollen, the right eye much protruded, the pupil presenting a pointed and decidedly greenish appearance, and the sight entirely suspended. General bad health for four months past, about which time the trouble commenced with the eye. I decided that the trouble was the result of disease of the antrum, and caused by the right superior first molar, which I extracted, in company with every other tooth or parts of teeth in the upper mouth, using ether as an anæsthetic. The patient went away, to call next day, but twelve hours after I was sent for, and found she had lost more than a quart of blood and was very uneasy. I arrested the hemorrhage easily by using ferri sub. sulph. Saw the patient three months after in good health, and with the eye in a normal condition."

Canada Journal of Dental Science.

Dr. C. Brewster calls attention to the styptic properties of "Lycoperdon," commonly called puff-ball, known in the United States as mushroom:

"This wonderful member of the Fungi family attains its full growth in a single night,—a considerable undertaking for nature even in this country, where it attains only the size of an ordinary apple; but when we take the 'Lycoperdon Gigantum' of the British Isles, which in those twelve hours arrives at a maturity of two or three or four feet in circumference, all other instances of the rapid growths of nature dwindle into insignificance. Its substance is made up of innumerable microscopic cells, almost beyond calculation. Some savans have placed the number contained in one of the largest sizes at the incalculable figure of 47,000,000,000, and nature manufactures them all in one night.

"Thirteen years ago I commenced using the lycoperdon in my practice, and in all cases it was attended with great success; so that in course of years I gradually abandoned all other material, officinal and non-officinal, and to-day I regard it, without any exception, the best-known remedy wherever it can be applied locally. Its mode of application is very easy, being simply to take a piece of the fungus large enough to fill the cavity left by the extraction of the tooth, and pressing it firmly in, hold it there for a minute. If there is blood still flowing, place another piece on the top of the first, and again hold it firmly there. If this does not yet arrest the hemorrhage, remove all that you have put in the cavity and repeat the operation. Two or three applications will cure the worst case. For any other description of wound, a piece large enough to cover its surface, held firmly on, or, if circumstances will admit of it, bandaged on. For cases where it is necessary to arrest the flow of blood from a leech bite, a small piece of this material pressed firmly on the spot for a moment will completely arrest the flow."

Missouri Dental Journal.

Dr. Eames reports on the Brockway method of working pyroxyline for dental purposes:

"Ample time has now, we think, been given to test the merits of Dr. Brockway's method, if it possesses any, and also to improve his method

of manipulation (if it were easily done), so as to do away with some of the objections patent to every one who has made a trial of it. With no desire to undervalue a good thing, or to do injustice to any one, we make the following report for the good of whom it may concern.

"We have been greatly disappointed in what we first thought would prove a valuable auxiliary in the dental laboratory. About eight months since we sought and obtained practical instructions in Dr. B.'s method of working pyroxyline, and immediately put it to a practical test. We liked the appearance of the material; it seemed to possess all the properties requisite as a base—lightness, strength, and elasticity; acids and the secretions found in the oral cavity seemed to have no action on it, and we were assured that it would not deteriorate on being worn in the mouth; was easily manipulated, and would retain its shape and form without change. It contained nothing injurious, the little coloring matter being perfectly harmless.

"Results have shown the claims of Dr. B. to be unfounded, otherwise the profession would now be using pyroxyline instead of rubber. We very soon became satisfied that it was not all that was claimed for it; that it would not answer our purpose as a base, unless some important improvements were made in the mode of working it; with this view we made some experiments, and succeeded only partially in overcoming some of the difficulties. The plates would spring from the die or mould after being swaged, especially if much of the solvent was used in attaching the teeth and rimming the plate. We have succeeded in overcoming this difficulty so nearly that we experience but little trouble from this source. But another and more serious trouble is met with in attaching the teeth. In the first instructions given, the teeth were to be backed by placing a quantity of the comminuted material around the rivets and then dissolving it with the solvent; we soon found that though we followed instructions closely, this formed a very poor attachment. The teeth would soon loosen and the case come to pieces. We improved upon this method of backing by using the sheet material with as little of the comminuted material as possible to fill around the rivets. We observed also that after a case had been worn a short time there would be more or less space underneath the blocks, forming a receptacle for particles of food, which, in time, became very offensive. After experimenting about two months, we received a call from Dr. Troutman, of the firm of Morrison & Troutman, Albany, manufacturers of pyroxyline base. He gave us some valuable hints, as he claimed, in the method of working it. To secure a firm foundation for the teeth, and prevent the shrinkage at this point, the result of which was the spaces we had observed, he filled all the space underneath the teeth with strips of the plate; or if the space was great, and the plate a lower one, he used tin filings to give the plate weight; if an upper one, cork filings, to give it lightness.

"We observed that a single tooth, as an incisor or bicuspid, would soon get out of position if attached in the usual manner. Dr. T. suggested the backing of these teeth with gold or silver plate, letting a strip of the backing extend from the base of the tooth into the base plate, as is often done with rubber. In this way this difficulty was effectually overcome. Dr. T. suggested several other minor improvements, which did not affect materially the general result. The attachment of the teeth was still defective and would give way; the plate

would change form and shrink from the teeth, and the whole process from the beginning to the end required the exercise of more care and patience than is often to be found in the mechanical branch of our profession at the present day. We were beginning to lose faith in pyroxyline, and was about giving it up, when we received a paper from Boston, containing what purported to be the report of a committee, appointed by the Boston Dental Society, on pyroxyline. This committee, composed of men well known to the profession, after careful investigation and several months' trial, reported favorably. Surely, thought we, something must be wrong, we have missed it somewhere. We don't know as much as we thought. So at it we went again, again to be disappointed. About this time we received from Messrs Brockway & Co. new instructions, some new apparatus, clamps, etc., also a specimen case. We found nothing new to us in the instructions, and we had already supplied ourselves with most of the apparatus, so we gained no information or advantage from this lesson. We then instituted some inquiries about the report in the Boston paper, and learned that it was a fabrication; that no such report had been made, that, on the contrary, a very different report would be made and published at the next meeting of the society. In the mean time our cases were coming back, some of them badly disintegrated, teeth loose, plate brittle, and in every way very unsatisfactory. * * * * *

"We report pyroxyline a failure in St. Louis, and we have received the same report from several of our correspondents in other cities, Boston excepted. We are making no further trials with pyroxyline, being satisfied with the experience we have had."

British Journal of Dental Science.

Dr. James A. Salter, writing of casualties which may arise in the operation of tooth-extraction, gives the following case of "Forcing a Tooth Fang into the Antrum:"

"A lady required several stumps removed from the upper jaw. I succeeded in extracting all on the right side very satisfactorily with stump forceps, but upon applying the same instrument to the buccal fangs of the left first molar they both, one after the other, slipped from my grasp and passed into the antrum. I had not the slightest reason to anticipate such an occurrence. The palatal fang came away easily, being firmly supported by a bony socket while I burrowed for and seized it. I briefly searched for the missing stumps in vain. So, as the patient had undergone a good deal of pain and distress, I requested her to come and see me again in a week. Before that time, however, had elapsed she called on me saying she could still feel the remains of the tooth with her tongue: but she had suffered no pain or inconvenience. Upon inspecting the mouth, I found both fangs free in the wound where the operation had been attempted: they had gravitated into the wound, and were held in place by a disorganized clot that surrounded them. With a pair of common dressing forceps I picked them from the mouth, and the wound soon healed. It is clear that in this case there had been very extensive absorption of the floor of the antrum around the outer fangs of the first molar, so that osseous tissue was wanting there entirely. Considerable absorption of this kind is by no means uncommon; but the accident of pushing a tooth-fang into the maxillary sinus in the endeavor to extract it is certainly a rare occurrence."

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

(Continued from page 475.)

Third Day—Morning Session.

The association was called to order at 10 o'clock by the President.

After reading of the minutes,

Dr. Taft moved to expunge that part of the minutes relative to the adoption and subsequent reconsideration and rejection of the resolution inviting certain gentlemen to participate in the discussions. This motion was discussed by Drs. Atkinson, Taft, McQuillen, and H. A. Smith, and was finally adopted.

The regular order of business was then resumed; the subject of histology being under consideration.

Dr. Atkinson said: I stated that cement was an equation between the morphological force of bone and dentine; the enamel is half-way between intertubular structure and silex. Hypertrophied cement has been called exostosis. I assert that these are different things, and am called a stickler for terms. Everything has motion. The diamond that glitters has motion—statical motion. What is periosteum?

A member. That which surrounds bone.

Dr. Atkinson. Suppose I wrap this handkerchief around a bone,—is that periosteum? Periosteum bears the same relation to bone that the poles of a scaffolding do to a house while building. It is trestle-work. The individual primal elements imbibe force, and that is nourishment.

Prof. Judd. In the course of the debate there have been things brought up worthy of discussion. Dr. McQuillen intimated that we did not do justice to a certain article of his. It was impossible to print the whole of the article, as what we said was in a mere résumé of all the dental journals. If we did him any injustice, it was unintentional. In relation to using the word exostosis to describe hypertrophied cement, the point is whether cement is true bone. If so, an enlargement is exostosis. Dr. Atkinson has given us the characteristics of bone. The only essential one, according to him, is that in cement the lacunæ have more canaliculi extending toward the surface than in the opposite direction. I do not consider any of these characteristic of bone. A trained eye can distinguish under the microscope sections of bone from different parts of the same animal. If that is true, there is no distinction to be made between cement and bone. Though we have different opinions held by different microscopists, we have facts enough to determine the matter without chance of error. In the femur, for instance, the Haversian system is fully exemplified; but in the ossicles of

the ear the canals have entirely disappeared. In the os-unguis of some animals the canaliculi have disappeared. These are true bone, and, if so, the Haversian canals are not essential to bone. I do not pretend to know more than Beale and all the other observers, but have made a few observations in this direction.

Dr. Atkinson. What is bone?

Prof. Judd. It is hopeless to attempt a definition of many words. The femur is bone, and the os-unguis is bone.

Dr. Atkinson. How can we differentiate in post-mortems between calcification and limification? Names mean something; words are expressive of the concepts of the mind. The os-unguis is only recognized as bone because of its location. Bones must have a cartilaginous state, or something analogous.

Prof. McQuillen. As to the presence of fibrillæ in the dentinal tubuli, Owen was the first who recognized these fibres in the tubuli of the tusk of the elephant. Tomes made sections of human teeth, and demonstrated the fibrillæ, and afterward suggested that these fibres might partake of the character of nerves. It is now, however, positively asserted, for the first time, that they are nerve fibres, and that nerve cells can be readily demonstrated in them. When I see a true nerve cell in a dentinal fibril I will believe; but, till then, the mere statement will not suffice. I would like to know, indeed, how many present have ever seen a nerve cell under the microscope, and are, therefore, prepared to decide upon such a question.

[The speaker then passed around a specimen of nerve cells taken from the spinal cord, and placed under a microscope, describing, at the same time, the characteristics of the nerve cells.]

As to exostosis, I would not impugn for one moment the motives of Prof. Judd. I recognize that the absence of Haversian canals does not prove that the substance is not bone. I have never seen microscopical preparations of the ossicles of the ear or os-unguis of the mouse. Specimens may be made in such a way as to destroy the characteristics of tissues. These preparations are often made in the greatest haste, not suited to such delicate investigations. The masters in art, such as produced the Apollo Belvidere and the Venus de Medici, did not rush off things in a hurry. These bones being very thin and surrounded on all sides by periosteum, nutrition may take place without the Haversian system. The large bones, however, demand an arrangement of this kind. As Dr. Atkinson says, all things differ but in degree, but these differences are of a marked character, and constitute individuality. Thus enamel, dentine, cementum, and bone have characteristic peculiarities which give each a distinct individuality.

Dr. Harriman. I have a high opinion of authorities, but new light is continually developing. The so-called canaliculi have nothing to do with

nutrition. Virchow tells us that he has discovered bone corpuscles. I can show you a preparation magnified two thousand diameters in which you can count forty or fifty branches. It would be impossible to separate a mass of substance like that. Bone is fibrous; dentine is fibrous. Bone and cementum are almost exactly alike, though there are no Haversian canals in cementum. The ideas of my paper will live when Prof. McQuillen and I are beneath the dust.

Dr. Walker is surprised that the views of Dr. Cutler on microscopy have been ignored.

The subject was then passed.

The rules were suspended to take up a proposed amendment to the constitution, allowing the time as well as place of meeting to be annually fixed. The amendment was put to vote and lost.

The subject of "Dental Therapeutics" was then taken up, and a report from Dr. Bogue, the chairman of the committee, was read by Dr. Atkinson.

The report, in the first place, spoke of the new remedy, thymic acid or thymol, which is produced from common garden thyme,—possessing its well-known odor,—but resembling cresyllic or carbolic acid in its qualities. It is in the form of solid crystals, becoming liquid at 200°, but returning to its crystalline state unless combined with glycerin. It is escharotic, antiseptic, stimulant, and *seems to be* anti-pus-formative. Its taste is disagreeable, and we must therefore use the same precautions as with creasote. It is probably well adapted to the treatment of abscess, and if it is equally destructive to microscopic germs as carbolic acid, will more than replace that substance. The philosophy of employing this, and similar agents, in the cleansing of canals in teeth containing decomposed animal matter, was spoken of, and the importance of thoroughness in the cleansing and disinfecting was urged. The use of ether, chloroform, or camphor as solvents was recommended in many cases,—the root to be filled with oxychloride of zinc, which is also a disinfectant. Labarraque's solution may be used when there is a very offensive odor.

In the treatment of necrosis, the use of dilute sulphuric acid or elixir of vitriol was highly commended. The dead bone should be removed as far as practicable, and the elixir injected once in thirty-six or forty-eight hours at first. Chloride of zinc should be used when all the bone is removed, 100 to 200 grains to an ounce of water.

In bleaching the teeth we use ammonia, cyanide of potassium, or oxalic acid; the first, where iodine causes the discoloration; the second, where nitrate of silver, and the last, where organic material in the tubuli produces it. The lips, etc. must be well protected, and the oxalic acid, which bleaches the tooth at the expense of its strength, must be placed in the cavity in small quantity, and in contact with the mouths

of the tubuli, dissolving it by a drop of water, and allowing it to remain five or six minutes. The cavity should then be filled with dry chalk, kept in by a temporary filling. In a day or two it should be excavated and filled, oxychloride being of service in further improving the color.

In reference to hydrate of chloral, the report took the ground that it was no safer than chloroform, and should not be used as a constitutional remedy, while there is little or no virtue in its topical application, to which, however, there is no objection. It was stated that it had proved fatal in a dose of twenty-five grains in at least one instance The use of carbolic acid in the cavity, covered with thin oxychloride of zinc, for the purpose of lessening sensibility, was spoken of. Chromic acid was recommended in the treatment of ulcers of the gums and mucous membrane. Oil of peppermint as a local anæsthetic was also spoken of.

Dr. Atkinson then read a report, written by himself, upon the same subject, of which the following is a synopsis:

"Therapeia" signifies healing,—a making whole of function or part; any agent that does this is a therapeutic agent. Therapeia can as yet hardly be termed a branch of science; at best it is but a collection of observations. The usual classification of agents (as "emetics," etc.) is crude and gratuitous. Until we understand the work effected by the agent on the body, and by the body on the agent, and whether the observed effects are not the joint result of both actions, we can make but little progress. Certain conditions are essential to therapeutic action. Temperature is a primal one, being the measure of molecular movement, out of which all other motions arise, whether in diffuse gas or concentrated solid. Mechanical support may be a therapeutic condition where it favors physiological, which thus becomes therapeutic, process. Therapeutic agents must be in a similar state of molecular tension to the body to be acted upon. The air in which we are immersed is a potent therapeutic agent. Proximity of mental and physical presence induce the polar tension in needy bodies. The presence of friends and foes may be capable of producing therapeutic effects. Those in charge of patients should be aware of the potency of these contacts. Thousands are to-day in a state of mental, bodily, and social fracture for the lack of knowledge of these principles.

This is owing to the false teachings requiring us to live in our intellects distinct from our affections. Such cases remain the opprobria of healing, in the highest circles of social relation. Were it not so, ninety-nine per cent. of lesions would be nil, and we should be able to live happily in the domestic relations of life, and in amity with the whole animal, vegetable, and mineral world. Morphology constructs, stores, and destroys the uni-oval, deut-oval, and trit-oval manifestations of the morphological corpuscles that are formed and fed, and fed and formed,

constituting, in their correlations, bodies and systems. There are said to be three kinds of osseous medulla, viz., gelatinous, yellow, and red. Dissections of rabbits would seem to indicate this. Waste of organs takes place at the surface, and the supply comes from the interior.

The new agents appearing during the year were spoken of, viz., thymol, and the chloro-acetic acids. The former has been described. The other has a strong affinity for dead connective tissue, epithelial scales, indurations, warts, and fibrous growths. For correcting unhealthy and brawny faces, for which "enamels," "bloom of youth," etc. have been resorted to to such an execrable extent, and producing a beautiful skin, these acids, judiciously used, stand unrivaled, dissolving off the old scales, and favoring the growth of a new supply.

At the conclusion of the reading, the meeting adjourned.

Third Day—Afternoon Session.

Called to order by the President.

After the reading of the minutes, the Secretary read a letter from Dr. T. T. Moore, of South Carolina, explaining his absence, and expressing a hope that he might be able to reach the Springs before the adjournment.

The regular order was then taken up, the subject of "Dental Therapeutics" being still under consideration.

Dr. Crouse called attention to the part of the report in reference to bleaching teeth. The method is well explained. Many do not attempt to bleach teeth; but if it was understood that so much might be done in this direction, more would be attempted.

Dr. Taft. But two or three agents have been referred to under the head of therapeutics; would it not be profitable to examine many others? We must ascertain what the effects of the agents are. How much do we, as a body, know about the specific or the general action of the agents we employ? In order that any agent may act therapeutically, it must be soluble. It may seem at first that things to which this quality does not appertain might have a therapeutic influence; pressure, heat, cold, etc. may be therapeutic agencies. But as a general thing this is true. How far may there be catalytic agency of substances,—bodies acting on other bodies without themselves becoming changed? How many understand the object of medicines? It is to cure disease. That involves a knowledge of disease. In a low grade of disease we must have tonics and stimulation. There are a multitude of causes of disease. There may be poisonous substances taken in, which require removal. These principles should be evolved. We should not sit down upon a small point, and remain there. We use agents in nine cases out of ten empirically. A certain agent is used with certain effects, and always used afterwards in similar cases; often

it is a failure. Monochloric acid is used externally, and its action can be observed. Applied to hyperplastic productions, it destroys them and takes them down. We should accustom ourselves to investigation as we go. We get to certain points, and do not go beyond them. In this case the tissue is decomposed; is it the chlorine or the acetic acid that does it? The action is similar to that of hydrochloric acid to a certain extent. Chlorine acts on a tissue, and breaks up its integrity. Can we get an agent that will devitalize certain tissue, and not act on the living tissue beneath? The elixir of vitriol does this, as announced last year. It does not meddle with normal living tissue. Animal chemistry protects the living organism; it is often ignored, however, in our treatment. There are other agents used for various purposes,—for example, disinfectants. Do we understand what is involved in a mere disinfectant? Do we use one agent in all cases? In disinfection there is decomposition both of the agent employed and of the material operated upon. Now, do we extract the fangs of the viper and leave his body to rot?

Prof. Judd. We cannot come down to specialties without bringing in pathology. The condition of the tissues must be considered. Inflammation is the great disease in nineteen-twentieths of the diseases we have to treat; sometimes it comes first, sometimes last. The old symptoms, redness, heat, etc., are not sufficient for us to know. We are indebted to the microscope for all our knowledge of the phenomena of inflammation. The first change after irritation is a contraction of the vessels,—some say of the capillaries; but this is a mistake, for there is no known contractile tissue in these vessels. It is a contraction either of the venous radicals or the arterial branches. If we have a state of congestion, what therapeutic agents shall we bring to bear? All assertions have been perfectly arbitrary. The consideration of the condition of the tissue will bring forth the therapeutic treatment. Suppose it is at the root of a tooth; we have stasis after congestion. There are agents by which we can reach even the root of a tooth. Generally we have a dull aching pain; we must get rid of the congestion. What is the cause? It may be heat, cold, or change of electric condition, etc. The cause, in many instances, has disappeared before we have anything to do with it. Cold will contract the vessels, expel the blood, and restore to a healthy condition. A restoration of tone to the vessels is necessary. Generally there is a want of tone in the muscular structure of the vessels. But suppose congestion is passed, and stasis established. Will cold answer? No; we shall fail if we try it. By stasis we mean an agglomeration of blood corpuscles in the vessels. In the normal state they do not impinge on the walls or on each other; they keep the centre of the tubes. But now the vessels are blocked and the passage of the corpuscles is arrested.

The liq. sanguinis is not always arrested. The corpuscles adhere to each other. It seems as if nothing but a change in the electrical condition of the parts could produce this effect. It does not require a very close examination to discover when stasis has taken place. Poultices were formerly used, and by this means the normal circulation was restored. Sometimes the corpuscles dissolve, but commonly the trouble goes on to the formation of pus. Can we do anything to assist nature to throw off the accumulation? Broken-down red corpuscles may be absorbed, but how far they are re-assimilated cannot be told.

We may by treatment arrest the extension of the inflammation to the surrounding parts; poultices may direct the point where pus shall discharge. We may give exit to the pus, which is the better way; the pus may be broken down and absorbed. Absorption is performed by the venous radicals and the absorbents proper. There are no true absorbents in the pulp of a tooth. We follow on till we arrive at a fistulous opening. If we examine this we usually find at the apex of the tooth a sac; this is formed of connective tissue, apparently homogeneous under the microscope,—not a homogeneous mass composed of *fibres and cells*, such as has been referred to in one of the papers. How shall we get rid of this abnormal condition? If recent, it is easily broken down and removed; if the exciting cause is removed, it will recover. Chronic cases are more difficult. We reach the disease by a therapeutic agent.

Dr. Atkinson. I have been asked what the specific action of the therapeutic agent was which I applied to the gentleman's corns. I reply, I think it was simply glacial acetic acid. I thought it monochloro-acetic acid. We know, however, that this last substance has an affinity for connective tissue corpuscles that are dried up and collapsed. If we would consider what the body is that elaborates function, we should understand its abnormal variations. Taking the organism as we find it, the alteration and generation of cells constitute the reproduction of tissues. There are three kinds of corpuscles by which the body is built up—red, yellow, and gelatinous. Connective-tissue corpuscles are the origin of all the tissues in the body. When a tissue has worked very hard, it gets tired. The cells are its laborers, and they cease to proliferate. The tissues are mechanically displaced in inflammation. A recent abscess can be more easily cured because there is less diseased tissue involved. There are fewer and smaller filaments of connective tissue involved. The nuclei of cells correspond to the stomachs of our bodies. Physiology is the exact equation of all the forces in the body; any disturbance of this is pathology. Any agent used to restore physiological action—pressure, gas, yea, even the kind word you speak to your patient, the presence of spirit—is therapeutic. It is the loss of equation between force and form,—the cells themselves and the typal master, the demi-god that dwells there-

in. If we would study normal action, we should study well aberrations from it. Sthenic inflammation is nonsense. A tissue under an abnormal condition never possesses higher vitality than in a normal condition. If there is a hyperplastic condition existing, there is always an invasion of another territory. Each cell crowds the adjoining one, and says, "Susie, you lay over there," and she does lay over. Any agent that will act upon this will be a therapeutic agent. Because of the pressure we have stasis produced. When we dissolve away this, the normal function goes on. We can do nothing till we understand that there may be irritation which stops the afflux and influx of physiological force. There is never congestion before stasis. The serial order begins by a lesion of nutrition, which is irritation. As soon as the circulation is arrested, stasis begins. By this mechanical pressure is communicated. The whole thing is accomplished by mechanical pressure. It is first colloid; then fatty degeneration takes place, and the process of healing is hastened by the heat melting the fat globules. There you have the key to the whole thing. Whenever you use heat and cold as therapeutic agents, be sure that it *is* heat or cold. If it is simply warm instead of hot, then spew it out of your mouth. I have taken out jaw after jaw which had been destroyed by the violation of this principle. Keep it cold or keep it hot. You have an exemplification of this in the pain experienced by bringing the tissue, whose function has been disturbed by a burn, close to the fire. It is change of habitat of the ghost.

The subject was then passed.

Committee on Operative Dentistry called, and asked for further time. Granted.

Committee on Mechanical Dentistry called, and also asked further time. Granted.

A voluntary essay on the subject of "Anæsthesia" was then read by Prof. Dickerman, of Taunton, Massachusetts. The paper opened with a quotation, which claimed that "nitrous oxide, among other useful things, was liable to abuse; that it was abused by being used as a plaything, as it had been—a fact which encouraged the ignorant to administer it, and fools to take it. The consequences of its being impure are that the air cells and red globules are cauterized, respiration temporarily destroyed, and the nervous system severely shocked. These cases are almost countless. Before its proper results can be realized, the public must learn that to take it is not 'a joke.' The profession must learn that its preparation requires knowledge, and its administration common sense; that the gas has no tendency to darken the red corpuscles, and if the complexion is darkened the gas is impure, or the patient is being smothered; they must learn more about respiration and the deadly nature of nitric oxide, chlorine, and carbonic acid; that administering to a patient his own breath is both filthy and deadly."

The essayist then discussed the question of the discovery of anæsthesia, and the agents for producing it. It was claimed that the discovery of the substance was one thing, and that of its anæsthetic properties quite another. Though Priestly discovered nitrous oxide, he did not discover anæsthesia by it. Horace Wells first realized it, but he neither discovered the one nor the other, for the gas had long been known, and so had anæsthesia; from time immemorial certain substances had been employed to produce sleep, such as *atropa mandragora*, and the fumes of the common puff-ball, said to have been used by the Chinese. Certain decoctions were used, during which "a member might be cut off without any pain or sense." The first attempt at anæsthesia by the lungs was in 1298, by a mixture placed on a sponge in hot water. Priestly wrote that he believed that in time great medicinal use would be made of these gases. Ether was first used to mitigate the pain of consumption, not to produce anæsthesia. Sir H. Davy experienced relief from pain while inhaling nitrous oxide, and expressed the opinion that it might be used in surgical operations. The anæsthetic properties of both ether and nitrous oxide were not made use of till many years after their introduction, and by entirely different actors. Faraday pointed out the effects of ether; but, as Wells first realized anæsthesia by nitrous oxide, in 1844, so Morton realized it with ether in 1846. It is noticeable that these substances and their effects were familiar in the lecture-room for thirty years before they were transferred to the operating-room. Dr. Wells became the first subject of an operation under the anæsthetic effects of either nitrous oxide, ether, or chloroform in December, 1844, having inhaled the gas to have a tooth extracted. Dr. Morton administered ether in 1846, having received the advice of Dr. Jackson to do so. Its use soon spread all over the world. It was first used in childbirth by Simpson, of Edinburgh, in 1847.

Chloroform appears to have been discovered by Samuel Guthrie, of Sackett's Harbor, N. Y., who described it in 1831 under the name of chloric ether. By other experimenters it was called bichloride of carbon. That it should have been called an ether is strange, as it is not inflammable, which is implied by the name ether (derived from the Greek *αἴθειν*, "to burn"). Chloroform was the name given by Dumas. Simpson first used it for medicinal purposes. It was used for difficult respiration and for asthma. Neither Wells, Morton, nor Simpson discovered either nitrous oxide, ether, or chloroform; nor did any of them discover anæsthesia,—they only realized anæsthesia by these substances. Nitrous oxide exerts neither a sedative nor toxic effect, as do ether and chloroform, the latter of which particularly exerts such effects, even to the cessation of the heart's action. The action of nitrous oxide is simply that of privation of atmospheric air.

Dr. Atkinson moved a vote of thanks to Prof. Dickerman for his able essay. Carried.

The Executive Committee reported a correct list of the delegates in attendance.

The rules being suspended for miscellaneous business, it was voted that the morning session be held at nine o'clock, and that it be opened with prayer.

Dr. Goddard called for the report of the special committee appointed last year to prepare a circular upon popular education, to be furnished at cost to the profession for distribution. None of the members of that committee being present (Dr. Peebles had the matter in charge at the time of his decease), the subject was referred to a new committee, to report next year.

A committee, consisting of Drs. Francis, Goddard, and H. A. Smith, was appointed to prepare resolutions of condolence in reference to the death of Drs. Peebles and Willis.

Dr. Thomas, of Detroit, offered an amendment to the by-laws or rules of order, providing that the sessions should hereafter be opened with prayer. Laid over, under the rules, till next year.

The special report of the Corresponding Secretary was called for, and read as follows:

Mr. President and Gentlemen,—Your Corresponding Secretary begs leave to report, that, in compliance with a vote passed at the last session at Nashville, he has framed the following resolution of thanks to Dr. S. C. Barnum:

In view of the fact that Dr. S. C. Barnum, of New York, has devised and presented to the profession the best and most perfect method known of protecting cavities against moisture during the operation of filling teeth, and in testimony of the high appreciation of this valuable improvement,

Resolved, That the thanks of the American Dental Association be, and hereby are, tendered to Dr. S. C. Barnum, for the invention, perfection, introduction, and donation of the "rubber dam" to the dental profession.

Deeming it to be in accordance with the intention of the association, the said resolution was beautifully engrossed, at an expense of twenty-five dollars, and presented to Dr. Barnum.

All of which is respectfully submitted.

I. A. Salmon, *Cor. Secretary.*

A letter of acknowledgment from Dr. Barnum was read, expressing his thanks for the honor, and his gratitude at being recognized by the association in this manner.

A resolution of thanks to the Secretary for the discharge of this duty was passed, and the bill ordered paid.

Adjourned.

Third Day—Evening Session.

This was a special session, held for the purpose of selecting a place for the next meeting, and the election of officers.

Nominations for place of meeting being in order, Niagara Falls, San Francisco, Detroit, St. Louis, Portland, and Cresson Springs, Pa., were nominated.

The inquiry was made whether absent members could be allowed to vote by proxy, on the payment of their dues, several gentlemen announcing that if such action could be allowed, they were instructed by others to cast their votes. An animated discussion took place, and it was finally voted that such a course would not be allowed.

A motion was then made, that in case San Francisco should be selected, an alternate place should also be chosen; and in case it should not be possible to procure half-fare to San Francisco, the meeting should be held at the alternate place.

The President decided that no such motion could be entertained, being in conflict with the by-laws.

Dr. Taft appealed from the decision of the Chair.

The appeal being sustained, the question was put, and, under the operation of the previous question, the motion was carried.

The ballot was then taken, and resulted in the choice of Niagara Falls, on the first ballot.

The association then proceeded to the election of officers. Under the revised constitution no nominations could be made.

On the vote for President being taken, Dr. George H. Cushing, of Chicago, was elected on the first ballot.

The following gentlemen were then elected to the offices named:

1*st Vice-President.*—Dr. C. E. Francis, of New York.

2*d Vice-President.*—Dr. J. R. Walker, of New Orleans.

Recording Secretary.—Dr. M. S. Dean, of Chicago.

Corresponding Secretary.—Dr. I. A. Salmon, of Boston.

Treasurer.—Dr. W. H. Goddard, of Louisville.

Members of Executive Committee (to fill vacancies).—Drs. A. B. Robbins, of Meadville, Pa.; S. B. Palmer, of Syracuse, N. Y.; and G. B. McDonneld, of Conneautville, Pa.

Adjourned. C. Stoddard Smith, D.D.S., *Reporter.*

(To be continued.)

TENNESSEE DENTAL ASSOCIATION.

The fifth annual meeting of the Tennessee Dental Association was held in Nashville, commencing July 27th, 1871, closing on the 29th.

During the two days' meeting harmony prevailed, all entering into the discussions of the various subjects reported upon by the regu-

lar standing committees,—Education, Histology, Physiology, Pathology and Surgery, Therapeutics, Operative and Mechanical Dentistry, etc. The meeting altogether was a very good one.

The society has at last taken one step toward educating the people in regard to their teeth. At the next meeting a pamphlet upon this subject will be reported,—we hope interesting and instructive.

The next meeting is to be held in Nashville, commencing on the 27th of July, 1872. It will, no doubt, be the largest and most interesting ever held by the society, all present promising to return next year prepared for the occasion, as well as to do all in their power to interest other good men in the society.

Officers for the ensuing year:

President.—L. C. Chisholm.

Vice-Presidents.—G. C. Sandusky and J. C. Ross.

Recording Secretary.—E. S. Chisholm.

Corresponding Secretary.—A. Hartman.

Treasurer.—S. J. Cobb.

A MEMBER.

CLINICAL REPORTS.

UNIVERSITY OF PENNSYLVANIA.

CLINIC OF DR. J. E. GARRETSON, LECTURER ON SURGICAL DISEASES OF THE MOUTH.

REPORTED BY DE FOREST WILLARD, M.D., PH.D.

CLEFT PALATE.—STAPHYLORAPHY.

I HAVE now to bring before you a number of cases which have been accumulating for some time, from the simple reason that I have not been anxious to undertake the operations, and also because they are not well calculated to be satisfactorily exhibited to a large class of students. These patients will present to you all the varying conditions and degrees of that deformity known as cleft palate,—a congenital deficiency which may consist merely of a slight defect in the uvula itself; or, on the other hand, be so extensive as to implicate both hard and soft palates, and even be associated with single or double harelip.

I say that I approach the operations for the relief of this difficulty with reluctance, and I will say, in the very beginning, that a considerable, and I might say a large, percentage, will prove failures. This, I am sure, is the result obtained by all surgeons who have had much practice in this department, even when the most favorable operation has been skillfully and properly performed, and all surrounding circumstances have been propitious. True, there are some foreign surgeons, as

Dieffenbach and Langenbeck, who have reported wonderful results, but I feel justified in saying that I believe the statistics to be faulty. Either they have not followed their patients to ascertain the final results, or else they have only selected peculiarly favorable cases for their operations, leaving the others untouched. In my opinion, it is a very unsatisfactory operation, yet, in certain cases, is well worth a trial.

Cleft palate is nearly always congenital. Perforations from the ravages of syphilis, etc. not being necessarily found in the median line, or in a longitudinal direction, are irregular in shape and position, and need never be confounded with the usual form. When the break is in the hard palate, you will usually be consulted soon after the birth of the child, and you should wait but a few weeks before instituting measures for its relief, since the prospects of success speedily diminish with the advancing age of the infant. At birth, as you are all aware, the bones of the skeleton are soft and flexible, the organic matter being considerably in advance of the thirty-three per cent. found in adult bones, though the precise amount is uncertain, owing to the different analyses by Rees, Von Bibra, Stark, etc. However this may be, we know that great defects of the skeleton can be relieved by continuous, even though gentle, pressure, as evidenced in the correction of a projecting mental protuberance, or of a myrtiform border, by the constant pressure, respectively, of the cervico-mento-vertical, or the occipito-alveolar elastic sling.

Recognizing this yielding character of the bones, we may endeavor, at this favorable opportunity, to close the cleft. What are the indications? To freshen the edges and bring the raw osseous surfaces in apposition. This can be done, either at once, by strong compression, or slowly, by a gradual process. Should the former be decided on, a well-padded clamp or compressor is to be selected, that of Hoey being an excellent instrument, and, after paring and freshening the edges of the bones, the pads are slowly forced down by the screw, driving the separated bones into close approximation. This should not be hurriedly or carelessly done, since fractures might result; still, such an event might not be prevented, and would not, moreover, be especially serious, since the treatment would be the same in either case, namely, rest, with the use of compresses and the Mayor occipito-labial sling.

Should this method be deemed too severe, that of gradual compression may be substituted. The apparatus to be employed will consist simply of two compresses fastened by adhesive plaster in such position as to press upon the alveolar borders from without inward toward the median line; and an india-rubber band which shall tightly embrace the child's head at the cervico-labial diameter; this apparatus should be removed twice daily, and the parts freely bathed with alum and whisky

to prevent excoriation. This process is slow, but it is almost certain to be successful, and, in a few weeks, the bones will be found in close apposition, when the operation can be completed by paring and uniting the cleft in the mucous membrane.

This will be the procedure which we shall try upon this infant,

Case I. Double Harelip and Cleft Palate, whom I had before the class some time ago. (*Vide* Reports for Feb. 1871, Dental Cosmos.) At that time I showed you the peculiar form of double harelip with which it was afflicted, having a large pendant mass hanging from the septum of its nose, and giving it a very curious and unpleasant appearance. I told you that it was also suffering from a complete break both in the hard and soft palates, rendering the mouth and nose a common cavity, with neither anterior nor posterior closure, thus preventing the child from sucking, and interfering greatly with deglutition. You will remember that we cut this prominence from its attachment to the septum by the bone forceps, and then pared the edges, and brought them together as in an ordinary case of harelip, remarking that the pressure occasioned by this lip might tend to close the palatal gap. Such has been the case to a certain extent; but as the lip is now in good condition and will bear the pressure, we will hasten the process by the plan above mentioned.

[The apparatus was then adjusted, and the mother told to bring the child for frequent inspection. The soft parts will be united by a subsequent operation.—De F. W.]

When the cleft has been neglected to adult life, it will usually be found best to adapt an obturator, unless the opening be very slight, in which case it may be treated in the same manner as though there were a perforation, and which I shall describe to you at the end of this lecture.

Case II. Wound of Palate.—Here is a little boy, nine years of age, who, while playing with a pointed stick a few days since, suddenly fell, and the sharp end entering his mouth, perforated the velum, and, tearing out, produced a severe punctured and lacerated wound. The edges are ragged and irregular, but, by careful paring, I think we can readily unite them. This should be done at once, before cicatrization or further absorption has occurred.

[The edges were then trimmed and brought together by several points of silver interrupted suture, as hereafter described. The wound was upon the right side of the uvula, and in depth extended almost to the hard palate.—De F. W.]

Case III. Cleft of Uvula.—Here is a boy, eight years of age, who has a division of the soft palate extending simply through the uvula itself. This will be a favorable case for operation, I think, since there will be but little strain upon the parts, and the boy is in good health.

This latter is a most important element in the consideration of all these cases; and if the patient be in a depressed condition, no attempt should be made until everything denotes that the person is in the best possible physical condition. Neglect of this precaution will almost surely give you a bad result.

Another important preliminary step is the education of the parts to be operated upon. The advantage of this will be readily understood by those who have used the laryngoscope, or treated diseases of the throat, for they cannot fail to notice the rapidity with which the parts accustomed themselves to the touch of instruments, becoming, in a few days, almost insensible to their contact. Without this previous education, accomplished by roughly handling and touching the parts, the retching will be so severe as to greatly interfere with, if not absolutely to prevent, an operation.

The operation of staphyloraphy has been practiced since 1764 (when performed first by Le Monier), the plans of Roux and Warren being the most frequent ones employed. From a considerable experience in this line of practice, I think, however, that I can accomplish it with much greater ease than by either of their methods. In the first place, I consider that the usual position in front of the patient is a poor one. It interferes with the light, and is more awkward, since the arms are unsupported and outstretched. Place the patient, however, in a chair, with a movable head-rest,—a dentist's chair is best; take your position behind him, upon an elevated stool, and you will immediately see that you are in just the right place; you have perfect control of his head yourself, and can turn it in any direction to remove blood or mucus or regulate the entrance of light. Moreover, you are out of the reach of any liquid which might be suddenly ejected, and you run but little risk in the use of your knife from the struggles of the patient. There are but few manipulations to be performed in the mouth which will not be better reached in this position than in any other.

In regard to anæsthetics, I am sure you will find their use attended with much inconvenience and discomfort, both to yourself and patient. If he will only summon the courage to co-operate with you, the task will be much sooner accomplished, and more satisfactorily done. It is an operation, however, which is most frequently performed upon children, and, of course, they will seldom be found willing to undergo the pain, and you are compelled to give the ether. Infants can be held, but it seems cruel thus to take advantage of their weakness.

The instruments which will be required are the same as those for vesico-vaginal fistula; in fact, the various steps of the operation are all somewhat similar in their methods and objects. You will require the long-handled forceps and knife, tenaculum, needles, needle-carrier, shot, shot-compressor, and shot-carrier, silver or lead wire, and mop-sticks.

Provide a tumbler of largely diluted tincture of iodine, and also of alum-water, to check the hemorrhage from the cut edges.

All things, then, are ready; but, as I look again into this boy's mouth, I am reminded at once that I must possess an accurate knowledge of the parts themselves, in order to appreciate the factors which will defeat our success.

To the anatomy of the soft palate I would then briefly call your attention. If you look in any mouth you will see the curtain which forms the posterior boundary of the mouth, the velum pendulum palati, or the anterior half-arches with the uvula, while behind are seen the posterior half-arches or pillars. These are made up of mucous membrane covering in certain muscles, aponeuroses, vessels, nerves, and mucous glands. The anterior pillar is chiefly composed of the palato-glossus muscle; the posterior, of the palato-pharyngeus; while between them is a triangular space which incloses the tonsil. The former muscle, otherwise known as the constrictor isthmii faucium, arises from the anterior surface of the soft palate on each side of the uvula, and, passing forward and outward, is inserted into the sides and dorsum of the tongue, where it blends with the fibres of the stylo-glossus. The palato-pharyngeus arises from the palate by an expanded fasciculus, which is divided into two parts by the levator palati; but, uniting again, is also joined by the stylo-pharyngeus, and is inserted with that muscle into the posterior border of the thyroid cartilage, some of its fibres being lost on the side of the pharynx, and others passing across the middle line, posteriorly, to decussate with the muscle of the opposite side. These two muscles, you will easily see, will be put upon the stretch when the parts are brought together in this operation; and it will often be necessary to divide them. This is best done by simply nicking them each sufficiently deep in one or two places with the scissors, the resulting wounds seldom giving any serious inconvenience, but healing rapidly, even when left to themselves. The muscle, however, which is most actively concerned in the operation for cleft palate, is the tensor palati, or circumflexus. This is a broad, thin, ribbon-like band, placed at the outer side of the levator palati, and arising from the scaphoid fossa at the base of the internal pterygoid plate, as far back as the spine of the sphenoid, and from the cartilaginous portion of the Eustachian tube, descends vertically to wind around the hamular process and spread itself by a broad aponeurosis upon the anterior face of the palate. Playing around this pulley, you can see that its strong action would be sufficient to destroy the most skillfully-performed operation; and in almost every case it becomes necessary to divide it. This is best done at the point where it winds around the hamular process. To find this point, you have only to carry your finger just posteriorly to the position of the wisdom tooth, where

the tuberosity of the superior maxilla will be easily felt; then you have but to pass backward one-half inch, when this prominent, hard process will be recognized. As the tendon is here passing from behind, inward and forward, you have but to make a simple oblique incision down upon the bone, when all strain will be quickly relieved. There is but little risk of the posterior palatine vessels, since they are, as a rule, concealed by the tuberosity itself.

The next muscle is the levator palati, which arises from the petrous portion of the temporal bone, passes into the interior of the pharynx, and then descends obliquely downward and inward, spreading its fibres out over the posterior surface of the soft palate as far as the raphe. When this is put upon the stretch, it may be divided by the plan of Sir Wm. Fergusson, who effected its incision by a curved knife, introduced behind the flap, half-way between the hamular process and the Eustachian tube, and perpendicular to a line drawn between them. A better plan, however, is that of Mr. Pollock; the flap being put on the stretch, a double-edged knife is passed through the soft palate just on the inner side of the hamular process, and above the line of the muscle. The handle being now alternately raised and depressed, a sweeping cut is made along the posterior surface of the soft palate, and the knife withdrawn, leaving only a small opening in the mucous membrane on the anterior surface. Remembering what I have now told you, you have all the surgical anatomy which will be needed, the azygos uvulæ muscle being of no practical importance.

The operation, as described in the text-books, consists of four different stages,—

1. The paring of the edges of the cleft.
2. The introduction of sutures.
3. The bringing together of the freshened edges, and fixing the ligatures.
4. The relief of any tension upon the ligatures which may attend the approximation of the parts.

I have not the time to describe the various modes of accomplishing these results, gentlemen, but will simply show you, by successive manipulations upon this boy, the procedures which I employ.

Having assumed the position behind the patient, before indicated, I carry the tenaculum through the point of the uvula, fix it firmly, and make a complete and perfect paring of the entire edge, cutting from behind forward to the very apex of the cleft, and extending one line in depth. A similar incision is now made on the opposite side, care being taken that no points remain uncut. The boy proves remarkably courageous, and I think ether will not be necessary.

Having seen that the entire surface is well freshened, we will give

him the gargle of dilute tinct. iodine, and wait for the hemorrhage to cease.

The next step is the introduction of the ligatures, and the material which I always employ is pure silver wire, since it is unirritating and can be retained in the tissues for a long time without producing irritation and sloughing, and, moreover, is much easier fastened than is a silk knot.

The first wire carried through is the one nearest the hard palate, and is easily accomplished if the needle is small and of the proper curve.

The needle is carefully fastened in its carrier, and then thrust through one side, about three lines from the edge, and nearly one-third of an inch from the apex, when it can easily be seized with forceps and drawn through while the porte is disengaged, again to be applied, and the needle carried through a corresponding point on the opposite side, to be similarly drawn through and brought out the mouth, there to be slightly twisted with its fellow for further manipulation. Other ligatures to the number required are then passed in the same manner, at distances of one-third or one-half inch,—two being sufficient in this boy's case.

Now comes the third stage. The two ends of the first ligature (the one nearest the hard palate) which were twisted together are now passed through the fenestrum of a shot-carrier, and the parts drawn together as the instrument is brought down. Having seen that they are movable, the shot is pushed down with the same instrument, and when the proper amount of tension is produced, the shot is then compressed tightly upon the wires, and the ligature is complete and may be cut off close to the button. The other ligatures may be treated in the same way; but, if there is much tension, do not neglect to divide the muscles as I have already shown you, which is the fourth step of the operation, and one which is highly essential. The arches may be nicked or the muscles divided, or both, according to the circumstances of the case.

Now we have fulfilled all the indications,—we have brought the freshened edges in accurate apposition, all strain has been removed, and our ligatures are not so tight as to quickly ulcerate themselves out.

There should be now no failure, and yet such often does occur, and is largely due, I think (when the patient is in healthy condition), to imprudence in not keeping the parts entirely and absolutely at rest. I believe that better results would be obtained if we would insist upon their remaining in bed for a few days, thus keeping all the muscles of the body in a state of constant quietude. Food, also, should only be given in minute quantities, and should be liquid for one week. Talking should also be strictly prohibited. The silver sutures will

seldom cause much irritation, and they may be allowed to remain from one to twenty days. I am sure you will find them far better than silk, beside being much more easily managed and fastened.

With the operation performed in the manner I have mentioned, I am confident that you will find it a much more simple affair than you have been accustomed to suppose from the descriptions in the books, and especially do I feel that much advantage will be gained by the position behind the patient.

Cases IV., V., and VI.—I have here three more cases which present various degrees of cleft, one of them extending a little deeper than the uvula, one entirely through the soft palate, and the other through the soft palate and a considerable distance into the hard. Two of them are children, one being of such age as to require ether, since we can expect no co-operation; but the last is a man of thirty years of age.

The manipulations will be precisely the same as those practiced in the preceding case, differing only in the extent of the incisions and the number of the sutures.

[Operations successfully performed.—DE F. W.]

Lastly, here is a man who has a large perforation of hard and soft palates from the ravages of syphilis. The opening is so extensive as to forbid all hopes of relief, and we can only adapt an obturator, which will form an artificial roof to his mouth and be of great comfort and utility. I cannot consume sufficient time this morning to properly describe the manner of constructing these obturators, but will rather refer you to the various works on general or dental surgery, which will contain all necessary information. If you reside in cities, you will seldom construct them yourselves; if in the country, I am sure you will find it more convenient to call in the assistance, tools, and appliances of a neighboring dentist.

Should the break be very small, you may possibly be able to close it by the operation of palato-plasty, staphylo-plasty, or urano-plasty.

Should you decide to perform an operation, you will find it of advantage to dissect up the periosteum freely with your flaps on either side, that the new tissue formed may be more solid in its composition. If the opening is minute, simple freshening of the edges with cantharides may be sufficient; but in either case I think you will obtain better results by introducing an obturator during the cure, in order to give support to the granulations. If tension is great after bringing the flaps together, perform myotomy on either side. The domestic obturators or plugs which are in such common use should be unhesitatingly discountenanced, since such a plug of cotton or tow is constantly exerting pressure upon the delicate edges and hastens absorption.

An example of their evil effects is seen in a specimen at St. Bartholo-

mew's Hospital, where a woman had been accustomed to wear a cork in a palatal opening which was at first but small. Its constant pressure produced absorption of the walls around it, and as the opening enlarged, she increased the size of the plug, until, at last, all the palatine plates of both superior maxillary and palate bones were absorbed, the antra were both obliterated, the vomer was nearly destroyed, and the superior ethmoidal cells laid open.

[Patient referred to a dentist of his town.—De F. W.]

EDITORIAL.

TO CORRESPONDENTS.

Manuscript not unfrequently comes to hand from correspondents which the editor and printer find quite difficult to read on account of the hasty manner in which the writing has been performed, and this often being done with a lead-pencil on a piece of brown wrapping or waste paper. Under these circumstances it is sometimes quite difficult to make out the meaning of the writer. To obviate this in future, correspondents would confer a favor by writing their articles on white paper, in a plain, bold hand (without any flourishes, which take time to make and do not improve, but mar, the manuscript), being careful at the same time to write on one side only. J. H. McQ.

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The report of the California State Dental Association, which appeared in the August number of the Dental Cosmos, was inadvertently credited to Dr. S. W. Dennis. It should have been credited to the secretary, Dr. H. G. Plomteaux. J. H. McQ.

BIBLIOGRAPHICAL.

We have received, too late for notice in this number of the Dental Cosmos, the following works: "Odd Hours of a Physician," by John Darby, M.D.; "The Teeth, and How to Save Them," by L. P. Meredith, M.D., D.D.S.; both from the press of J. B. Lippincott & Co., Philadelphia. "Practical Therapeutics," by Edward John Waring, M.D., F.L.S.; Second American, from the third London edition; from the press of Lindsay and Blakiston, Philadelphia. *

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

"*How to enjoy Good Health and a Long Life. Practical Advice by a Practical Man.*—To secure a clear, fresh skin, bright eye, active limbs, a quick brain, and a cheerful, pleasant temper, and if you would enjoy a long life, you should live about as follows:

BREAKFAST.

"Oatmeal porridge, with milk and sugar.

"Or, Graham mush, with a little good syrup.

"Or, cracked wheat, with milk and sugar.

"Or, baked potatoes, with bread and butter.

"Or, beefsteak or mutton-chop, with baked potatoes, and bread and butter.

"If you are thin, and need fat, use the first three; if you are too fat, use the last-named two.

"Drink cold water, or a little weak coffee.

DINNER.

"Beef or mutton, roasted or stewed, with any vegetables you may like (though tomatoes should be used very sparingly), good bread and butter, and close the meal with a glass of weak lemonade. Eat no dessert, unless it be a little fruit, and eat nothing more till the next morning.

"There is no rule in regard to diet about which I am so fixed in my convictions as that nothing should be eaten after dinner; and I think that the dinner should be taken early in the day,—not later, if it can be so managed, than two o'clock. In regard to the precise hour for the dinner, I am not so clear, though for myself one o'clock is the best hour; but, in reference to the omission of the third meal, I have, after long observation, no doubt whatever.

"Hundreds of persons have come to me with indigestion in some of its many forms, and have experienced such relief in a single week from omitting the supper, that I have, for a number of years, depended upon this point in the diet as the best item in my prescriptions for indigestion. I have never met one person suffering from indigestion who was not greatly relieved at once by omitting the third meal.

"Eat nothing between meals, not even an apple or peach. If you eat fruit, let it be with the breakfast and dinner.

"Cooked fruit is best for persons of weak digestion. I have met hundreds of people who would digest a large beefsteak without a pang, but who could not manage a single uncooked apple.

"I think certain dietetic reformers have somewhat overrated the value of fruit.

"Avoid cake, pie, all sweetmeats, nuts, raisins, and candies.

"Manage your stomach as above, and at the end of ten years you will look back upon these table habits as the source of great advantages and happiness.

"For thirty years I have been a constant and careful observer (I

have no hobbies about diet), and in the light of my own experience and these long observations, I assure you that the table habits I have advised are vital to your health and happiness.

"Pimples, blotches, yellow spots, nasal catarrh, biliousness, liver torpidity, constipation, sleepiness, dullness, low spirits, and many other common affections would generally disappear with the adoption of these rules.—*Dio Lewis, in 'Our Girls.'**

"[We will add, for the satisfaction of our readers, that Dr. Lewis, who here intimates that he practices what he preaches, presents in his own person about as fine an example of genial good health and wide-awaketiveness as one ever meets."—*Ed. Sci. Am.*]

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"*Calcareous Salts and the Lacto-phosphate of Lime in the Treatment of certain Diseases of the Osseous System.* (*Echo Médical et Pharmaceutique Belge* and *Half-Yearly Abst. Med. Sci.*).—For a long time past the calcareous salts have been employed in medicine. The numerous experiments of Chossat, who established in a vigorous manner the fact that certain animals did not find in their ordinary food sufficient mineral substance for the reparation of losses of osseous structure, have increased considerably the uses of these agents. It is evident, in fact, that in order for the physiological equilibrium to be maintained, alimentation must be completed by the addition of calcareous material to keep up the solidity of the skeleton, and to prevent the bones from becoming very fragile.

"In cases of rickets and osteomalacia, Bouchut prescribed phosphate of lime in quantities of from two to five grammes in the day. Piorry gave this agent to children in doses varying from five to ten grammes, it having been reduced to an impalpable powder and mixed with a soft substance, as cream or marmalade. In many cases this physician served the phosphate of lime with iodide of potassium. Guersant and many others prescribe eight to ten small pastilles to be taken every day, each containing three centigrammes of lactate of iron and five centigrammes of phosphate of lime. In their observations on men and the lower animals, MM. Gosselin and A. Milne-Edwards made out that in cases of fracture the necessary time for consolidation was notably shortened after the administration of phosphate of lime with the food.

"It results, however, from experiments recently undertaken by M. Dusart and Dr. Blache, that the phosphate of lime hitherto used in therapeutics is nearly insoluble in the gastric juice, and consequently unfitted except to a very slight degree for becoming assimilated. In obtaining artificially an analogous substance to the product of the action of gastric juice on the phosphate of lime, we have at disposal an agent whose power is much more considerable, and one which presents to therapeutics the best guarantees for its absorption. This new product, obtained by the action of lactic acid upon phosphate of lime, is called by MM. Dusart and Blache lacto-phosphate of lime,

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* While in general these rules are judicious, there are many cases requiring special alimentation in regard to frequency, quality, and quantity of food taken. *Hot* fluids are usually best at meals, as cold reduces the temperature and tone of stomach, and retards digestion, besides impairing the general processes of nutrition.—Z.

rather for the sake of recalling its composition than for representing a definite chemical body, which does not last. It is a salt perfectly soluble in water and all gastric fluids, and can, consequently, be readily administered.

"With this salt MM. Blache and Dusart have made experiments, which justify them in concluding that when administered in cases of fracture in animals it is readily absorbed and assimilated, and shortens considerably the duration of the time necessary for consolidation. These experiments were made exclusively upon the guinea-pig. They were enabled to make out that the increase in weight of the bones of this animal, after being subject to a régime of the lacto-phosphate of lime, exceeded by more than thirty-three per cent. the weight of the bones of a similar animal subjected to an ordinary régime. The consolidation seemed to follow a proportionate course. After this success they no longer hesitated to apply their experiments to the human body. The results which were then obtained were even more satisfactory. In most instances the consolidation of fractures was remarkable for its great rapidity. They report in their article a great number of observations, all of which go to favor the use of the lacto-phosphate of lime. In one case, a young man, both bones of whose leg had been fractured a short distance above the malleoli, was able to walk on the twenty-second day after having taken daily three grammes of phosphate of lime dissolved in simple syrup. Cases of rickets, of dyspepsia characterized by the failure of acid secretion, and also cases of general debility, seemed to be adapted for the employment of the lacto-phosphate of lime, given in doses proportionate to the age of the patient and the importance of the affection.

"When it is considered how readily the organism of an animal becomes deprived of phosphate of lime under the influence of an insufficient or imperfect alimentation, it will be admitted that in a great number of affections the effects of mineral inanition may add their action to that of the affection itself, and continue during the convalescence, the duration of which is thus increased. 'Inanition, or rather, inanitiation,' says Jourdan and also Bérard, 'is a cause of death which is developed in silence, with every malady in which alimentation is abnormal. To supply nourishment is to take nature into working partnership.' As it has been rigorously proved that the lacto-phosphate of lime may produce so great a result, let this agent take the rank which it deserves in therapeutics. It may be administered either in pastilles or in syrup. It is generally employed in the latter form."

Dental Caries.—In some "Remarks on Degeneration of Race in Britain" (Proceedings of the British Association for Advancement of Science, *Med. Times and Gaz.*), Dr. J. Beddoe observed: "The peasantry of some parts of Ireland, the Highlands, and Wales may be better fed than they were a generation back. It does really seem as if the cotters of Cardiganshire had improved in physical development since the last century, when they are described by a traveler as five feet two or three inches high, whereas now they are not a remarkably small people. But, on the whole, I much fear that the conditions, the media—the *milieux*, as the French anthropologists call them—which act on the physique of the British, tend rather to grow worse than to grow better. To begin with,

there is the one great and inevitable evil—the gradual accumulation of our people into large towns, and the relative, and often even absolute, dwindling of the rural population. Large numbers of people are constantly being employed in in-door occupations, mostly sedentary, and some nocturnal and exhausting; and the demand for the labor of women and children also increases. Changes are taking place in the dietary of the working classes, and, as their wages rise, it seems to be supposed that they are better fed, but on closer investigation this seems very doubtful. Of the four countries—England, Wales, Scotland, and Ireland—the first, which is the richest, and considered to be the most advanced in material civilization, and whose habits and modes of life are more and more imitated by the others, is, according to Edward Smith's reports on the subject, the one in which the people are most scantily and ill nourished. The scarcity of milk especially, as to its supply to children in towns and in dairy districts, is a growing evil, and one of national importance. Here I may mention, as having probably a relation to the quality of the food, and possibly to this very defect of milk, the apparently growing evil of unsound teeth, which, again, seems to advance *pari passu* with the advance of material civilization, and is worst among the English and the townsmen of the United States, not so conspicuous among the Scotch, and decidedly at the minimum among the Irish.

"The President said that of late years he had had through his hands a large number of the crania of ancient inhabitants of these islands; and it was most interesting to compare the teeth in the skulls of these more primitive people with the teeth in the skulls of the moderns. He hardly ever found decayed teeth in one of those ancient craniums, whereas he scarcely found the skull of an adult modern in which some of the teeth were not decayed, while a considerable number had lost their teeth altogether; so that it was clear that, whatever advantages civilization might bring, it did not improve the condition of the teeth."

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Teeth. Extract from *Chambers's Journal* and *Scientific American.*—"Some old folks cut their teeth when far advanced toward centenarianism. An old woman named Dillon, living near Castlerea, in Ireland, cut an incisive tooth in the lower jaw when seventy-five years old; it confirmed a strange hallucination with which she had long been possessed—that she had been dead, and was come to life again, with the usual infantine career of teething, etc. Mrs. Fussell, living at Acton, about a dozen years ago, cut an entirely new set of teeth when about eighty years old, after having been many years toothless. In 1732, Margaret White, of Kirkcaldy, in Scotland, cut eight new teeth in the eighty-seventh year of her age—thus winding up a toothless period of many years. Mrs. Page, a dame of Southwark, after being toothless from seventy to ninety years of age, cut several new teeth. The Rev. Samuel Croxall, translator of *Æsop's Fables* from the Greek, 'died of fever, occasioned by the pain he underwent in cutting a new set of teeth at the great age of ninety-three.' Edward Progers, aged ninety-six, died in 1713, 'of the anguish of cutting teeth, he having cut four new teeth, and had several ready to cut, which so inflamed his gums that he died thereof.' The late Sir George Cornewall Lewis was very skeptical as to people ever living to the age of a hundred;

he would probably, therefore, have pooh-poohed the story of Robert Lyon, of Glasgow, who cut a new set of teeth at the age of a hundred and nine; and still more that of James Hook, of Belfast, who, in the time of Queen Elizabeth, and at the age of a hundred and twelve, 'gott a new set of teeth, w^{ch} has drove out all y^{e} old stumps.'

"As if to take revenge for the duplications, or rather triplications of teething, nature sometimes requires us to dispense with dental apparatus altogether. At Gayton le Marsh, in Lincolnshire, there is the following epitaph: 'Elizabeth Cook, a poor woman, aged 86, and who never had a tooth, was buried June 11, 1798.' On the other hand, some folks greatly exceed the orthodox number of thirty-two. Dampier, in his account of the Philippine Islands, says: 'The next day the Sultan came on board again, and presented Captain Read with a little boy; but he was too small to be serviceable on board, and so Captain Read returned thanks, and told him he was too little for him. Then the Sultan sent for a bigger boy, which the captain accepted. This boy was a very pretty, tractable boy; but what was wonderful in him, he had two rows of teeth, one within another, in each jaw. None of the people were so; nor did I ever see the like.'

"The 'pearly teeth' of the poet and novelist would not be valued by some of the Eastern and Polynesian nations. The Chinese blacken their teeth by chewing the fruit of the areca, or betel-nut. The Tonquinese and Siamese gents and belles, in bringing about the same result by nearly the same means, almost starve themselves for three or four days, while the dyeing is going on, lest the food should disturb the dye. The Sunda Islanders sometimes blacken all the teeth but two with burned cocoanut; covering the two excepted teeth with thin plates of gold or silver. The Macassar people sometimes pull out two front teeth, in order to supply their place with teeth of pure gold or silver! Two Italian girls, twins, have been known to have natural teeth of a light red rose color—both the milk teeth and those which succeeded them.

"Why do some people's teeth come out more readily than others? The reasons for this are probably many. About the middle of the last century, Peter Kalm, a Swede, visited America, and wrote sensibly about what he saw. He observed a frequent loss of teeth among settlers from Europe, especially women. After discussing and rejecting many modes of explanation, he attributed it to hot tea and other hot beverages; and came to a general conclusion that 'hot feeders lose their teeth more readily than cold feeders.' Mr. Catlin, who some years ago had an interesting exhibition of Indian scenery, dresses, weapons, etc., noticed that North American Indians had better teeth than the whites. He accounts for the difference in this strange way—that the reds keep the mouth shut, whereas the whites keep it open. The teeth, he says, require moisture to keep their surfaces in good working order; when the mouth is open, the mucous membrane has a tendency to dry up, the teeth lose their needed supply of moisture, and thence come discoloration, toothache, tic douloureux, decay, looseness, and eventual loss of teeth. Mr. Catlin scolds the human race generally for being less sensible than the brutes in this respect, and the white race specially in comparison with the red. We keep our mouths open far too much; the Indian warrior sleeps, hunts, and smiles with his mouth shut, and respires through the nostrils. Among the virtues attributed by him to

closed lips, one is excellent—when you are angry, keep your mouth shut."

Tooth imbedded in the Lower Jaw.—" Prof. Leidy exhibited to the Academy of Natural Sciences of Philadelphia a lower jaw of an aged man, recently obtained in his dissecting-room. The teeth had all been lost except one, and the alveolar border had been absorbed so that the body of the bone was reduced as usual to half its original depth. The remaining tooth is a completely developed and full-grown third molar of large size, which lies imbedded in the jaw horizontally, with the unworn triturating surface directed toward the position which had been occupied by the teeth in advance. The tooth is perfectly sound, and in this old jaw, in which all the other teeth had been lost and the alveoli obliterated, favors the view that the teeth are liable to caries only when exposed to exterior influences. Similar specimens of teeth remaining imbedded in the jaw are not unfrequent, but the one exhibited is the oldest which Prof. Leidy had seen."—(*Proc. Acad. Nat. Sci.*)

Spontaneous Generation.—At the late meeting of the British Association for the Advancement of Science (*Med. Times and Gaz.*), " Dr. Charlton Bastian described some new experiments, the results of which led him to the conclusion that living matter might arise *de novo*, and that this living matter might go on to the development of certain common organic forms, just as surely as any speck of crystalline matter in a fluid might take on and assume certain definite characters which belonged to the saline substance in its crystalline condition. His experiments showed that living organisms had been found in fluids that had been exposed to a temperature higher than was sufficient to destroy germs.

" Dr. McKendrick said that the experiments he had made did not warrant him in adopting the conclusions on either side of the question. With regard to Dr. Bastian's experiments, he observed that the germs or ova of living creatures must always be more delicate and likely to be destroyed than the creatures themselves.

" Dr. Lankester considered the question to be still open. He did not see why theologians should denounce the supporters of spontaneous generation, because the church in former ages had believed that organic beings might arise from inorganic substance. Dr. Bastian wished them to believe that his experiments had proved spontaneous generation; but there were other and more interesting speres of observation, and he (Dr. Lankester) thought that it was in the slimy deposits in the depths of the sea that they must look for the solution of the difficulty. The question should not be regarded as irreligious. Philosophers were quite justified in looking for the truth, and no theory or view should be suppressed that might at last turn out to be true.

" Mr. Leighton, Liverpool, said that in all the discussion it was assumed that what was inorganic was without life; but this opened up the question of matter and spirit; and on what ground, he asked, did they assume that matter was inert?"

Tumor of Superior Maxilla, caused by the Growth of a Canine Tooth within the Antrum; Operation. By R. W. McCoy, F.R.C.S.,

Colonial Surgeon, Sierra Leone, West Africa.—"A negro boy, a native of Sierra Leone, aged fourteen years, presented himself among the extern patients at the Colonial Hospital, Freetown, in the month of March, 1871, with a tumor of the left upper jaw growing from the antrum. The tumor formed a globular projection on the left side of the face, about the size of an apricot, producing a good deal of facial disfigurement The nose and mouth were distorted to the right side, the left ala nasi was flattened out, and the alveolar margin and corresponding front teeth of the left upper jaw were visibly prominent, with a bulging of the palate plate in the roof of the mouth. It was quite painless; no tenderness to the touch; firm and slightly elastic on pressure; circumscribed and clearly limited to the boundary walls of the antrum; and the integument was freely movable over its surface. A correct history of their diseases is always difficult to get from the natives here; but, as far as I could ascertain, this was of about two and a half years' duration from the time it first attracted attention—growing slowly and painlessly, and not in any way affecting the boy's general health, which in other respects was good.

"I punctured the tumor under the lip with a trocar and canula about the centre, where the wall seemed thin and elastic, and drew off half a drachm of thin glairy fluid, plugging the opening afterward with a narrow strip of lint. The puncture, however, closed up in a few days, and the tumor continued to increase in size. I proceeded to remove it on the 11th of June. The boy having been put under chloroform, I made a single straight incision through the upper lip to the left of the mesial line into the nostril; and, having divided the mucous membrane along the gum, was enabled, by the expansion of the nostril and the pliancy of the integument, to dissect the soft parts from the tumor, and expose its entire surface. I then notched it in front with a small knife-saw, and used the bone forceps to complete the excision of the front wall of the tumor. The plate of bone removed was $2\frac{1}{2}$ inches by $1\frac{3}{4}$ inches, very thin, and lined on its concave surface with a thick, gelatinous substance—mucous membrane morbidly thickened and degenerated. The cavity of the antrum was found nearly filled up by this morbid substance. In the centre was a space about the size of an almond, containing a little viscid mucus, and projecting into it from above was a tooth. The tooth was firmly imbedded in a socket, apparently growing from the nasal process or inner angle of the orbital process of the superior maxilla, and it required some force to extract it with the tooth forceps. It was a fully developed, sound, canine tooth. Having removed a quantity of the gelatinous contents of the tumor, the wound in the lip was closed by two silk sutures and a hare-lip needle in the centre. There was very little bleeding throughout, and the wound healed by the first intention.

"The boy is now perfectly well, and his expression of face as good-looking as Nature ever designed it to be. The left upper canine tooth is wanting in its natural place."—(*Lancet.*)

Enucleation of Tumors from Bones.—In a paper to the Royal Med. and Chir. Society (*Med. Press and Cir.*), Mr. James Paget, D.C.L., F.R.S., urged "the propriety of removing the majority of non-malignant tumors growing in bones, by simple extirpation or enucleation,

rather than by resection of the bones or by amputation. It was shown that these tumors are as separate from the proper tissue of the bones as are fatty and most other innocent tumors from the connective tissue or other structures in which they grow; and that the same rules of operation are applicable to the one as to the other set of tumors. Cases were given of successful enucleation of fibrous, myeloid, cartilaginous, and osseous tumors, and some rules were stated for the diagnosis of malignant from innocent tumors in bones, and of those which grow within from those which grow without the bones."

"*Saliva in Rheumatism.*—This has been asserted to be acid, and to prove thereby the acid diathesis, Miller says that the saliva is usually alkaline in health, but has been observed to be acid in various forms of inflammatory disease. This would be sufficient to establish my position that there is nothing peculiar in the saliva in rheumatism. But the condition of the saliva is quite the reverse. In rheumatism, as well as in fevers and other inflammatory disorders, it is alkaline, and not acid. It is true that if test-paper be applied to the tongue, the blue litmus will be more or less reddened, but this is due to the presence of mucus, and partly, perhaps, to decomposition of saliva. In health the mouth is continually washed with fresh secretion, and so is generally maintained in an alkaline condition. This alkalinity is increased during meals, for large supplies of fresh saliva are then secreted, and all old mucus is removed. But if the secretion is viscid and scanty, as in fevers, it soon becomes acid, chiefly from admixture with mucus, partly from decomposition, and partly from absorption of the carbonic acid of the breath. In such a case, however, let the mouth be well rinsed with pure water; then, if saliva can be secreted in sufficient quantity, let a drop be allowed to overflow from the open mouth (the tongue being kept quiet) on to the test-paper: it will invariably be found to be alkaline. If there is not sufficient saliva for this, pass the paper lightly over the surface of the tongue; it is then alkaline, also, though in a less degree. If you have to press the paper on the tongue to get enough moisture, it may be acid, though often alkaline. This alkalinity diminishes in two or three minutes, and with scanty saliva soon disappears. Rheumatic fever is no exception to this rule. I have been thus minute in respect to this symptom, because it is not only an argument lost to the other side, but tells against them. It is also a fact that the acidity seems unquestionable without the above precaution."—(Dr. J. James Ridge, *Med. Times and Gaz.*)

"*Uses of the Uvula.* By Sir Duncan Gibb.—Anatomists describe the action of the uvular muscle as an elevator which shortens the uvula. It is, however, a sentinel to the fauces, especially in the act of deglutition; for when any substance comes into contact with it, it excites the action of all the neighboring muscles until it is got rid of. It possesses a function of not less importance, in holding the soft palate tense and firm in the medial line against the wall of the pharynx during the act of deglutition itself, and thus prevents the passage upward of fluid or solid substances behind the nose. This was supported by experiments upon a person who had lost the bones of the nose, permitting of a view of the action of the soft palate from its nasal aspect during de-

glutition with or without food. Under either circumstance, a double arch was seen in the form of two convex swellings, held in a state of firm tension by the action of the uvula passing down the centre of the soft palate, with its end resting flat against the wall of the pharynx. The tension ceased the moment that the constrictors of the pharynx had fully exerted their influence over the substances swallowed. While the uvula has its special uses in the act of deglutition, it exerts a not less decisive influence upon the voice when uttered in a very loud tone, or in singing the higher registers, in both sexes. Then its character as a levator or shortener is exerted. If this power is impaired by removal of the muscular (not the membranous) end, then the singing powers are damaged. The elongation of the uvula and its effects formed a subject of observation, a distinction being made between its elongated membranous end and the true muscular end. Speech, the author said, was modulated by the soft palate and uvula, and the motor power of the latter is unquestionably exerted in pronouncing the letters K, Q, and X, with their associations, more especially the gutturals of the various languages."—(*Med. Times and Gaz.*)

New Respirator.—Jas. St. Clair Gray, M.B., C.M., etc., of Glasgow, writes, July 24th, 1871, to the *Lancet:* "Having read in your journal Dr. Somerville Oliver's notice on the use of oakum as a respirator, it recalled to my mind a similar apparatus which I last winter constructed, spun glass placed behind a sheet of wire gauze and perforated plate being therein used. I was led to adopt this from the success which attended the use of spun glass as a substitute for carded cotton in the filtration from air of the germs, sporules, dust, or whatever those minute particles which float in the atmosphere, and to which attention has so much of late been attracted by Prof. Tyndall, may be. In a repetition of Prof. Tyndall's experiments made by Mr. Herschel, of Anderson's University, at the *conversazione* of the Fellows of the Faculty of Physicians and Surgeons of Glasgow, it was found impossible by filtering the air through carded cotton entirely to remove these particles. As I happened to have at the time with me some spun glass to exhibit its powers of filtering strong acids and alkalies, it was proposed to substitute this for the cotton. This was accordingly done, when it was found that the air so treated was entirely filtered of all such impurities. It then occurred to me that spun glass might prove very useful as a respirator, either alone or as an adjunct to the materials at present in use. Acting on this idea, I manufactured a respirator constituted as above described, which was possessed of the following advantages: it was not more expensive than the ordinary forms, was quite equal to them in power of elevating the temperature of the respired air, thoroughly purified the air of all solid matters suspended therein, and acted as a very serviceable reservoir for such substances as carbolic acid. I should think that such an apparatus would be, at any rate, more elegant, durable, and cleanly than one of oakum."

Inhalation of Carbolic Acid Vapor Dangerous.—"On Thursday, Aug. 10th, one of Dr. E. R. Squibb's workmen, in changing a receiving flask into which carbolic acid was being distilled, broke the flask and scalded himself, not very badly, with the hot phénol. This was bad enough; but he managed to inspire the vapor in considerable quan-

tity, with the result that in half an hour he was dead, despite all efforts to save him, probably from the profound anæsthetic effect of the vapor. He was a German, and leaves a wife and three small children."—(*Amer. Jour. Pharmacy.*)

Narcotism; Treatment.—"As narcotism has become so frequent, I am tempted to add to the length of this paper by giving what I regard as a valuable adjunct, at least, to its treatment. It has, no doubt, been often employed, but I do not remember to have seen any stress laid on the use of hot water, *stinging hot*, to the feet. My plan is to plunge the feet in hot water and hold them there until the patient gives decided manifestations of pain. I renew the application every few minutes, taking care not to dull cutaneous sensibility by too frequent or prolonged use. It has this advantage: you can regulate exactly the amount of stimulants necessary; at the same time it causes an increased diaphoresis, still further 'guarding the action' of the narcotic after the manner of ipecac. It seems to stand next to the galvanic battery in power and similarity of action. I have used it in three cases with success, employing it perseveringly for three or four hours. Perseverance and hot water will do the thing."—(*Medical and Surgical Reporter.*)

Monsel's Solution in Dental Hemorrhage.—"Case I. G. C., aged thirty, called at my office at 10 P.M., June 18th, to have a painful tooth extracted, which was accomplished without much difficulty or much hemorrhage; it was the right wisdom tooth of the lower jaw. He returned home and had a good night's rest, but on awaking the next morning found his mouth full of blood, and from this time until he sent for me at 2 P.M., the next day, he continued to spit up mouthfuls of blood every few minutes, emptying at night and the next day, according to his statement, the chamber five times; of course, the chambers were not full, and contained a good deal of saliva besides; the blood he lost the day before I could not estimate, as he spit it out on the ground; his blanched skin and physical weakness sufficiently indicated his condition. His family had tried various domestic remedies, among them sulphate of copper, without avail. I removed the clots and plugged the cavity with cotton soaked in Monsel's solution with the effect of immediate arrest of the hemorrhage. Three years before, the father of this man suffered in the same way from having the corresponding tooth pulled, except that he bled for six days, all remedies being unsuccessful until his physician resorted to the actual cautery, thoroughly searing the bleeding cavity."—(E. L. Drake, *Ibid.*)

"*Turpentine and Phosphorus.*—MM. Höhler and Schimpf have reported in the *Berliner Med. Wochenschrift* that they have repeated the experiments of Personne with the following results:—Commercial oil of turpentine is a good antidote to poisoning by phosphorus. There is no fatty degeneration of the tissues, nor is there any free phosphorus found in the system of the animals experimented on. Phosphorus and turpentine oil form in the stomach a compound resembling spermaceti, which is readily excreted."—(*Med. and Surgical Reporter* and *Boston Med. and Surg. Journal.*)

Disinfection—A New Method.—"Edward H. Hoskin, M.D., of Boston, Mass. (*Boston Medical and Surgical Journal*), has designed a new and simple apparatus, which he calls an 'Eudipile,' the object of which is to vaporize certain chemical substances, and thus thoroughly to disinfect the air, walls, ceiling, and the entire contents of any apartment. It consists of a bottle, wick, and—attached to the free end of the wick—a bulb of spongy platinum. Into the bottle should be poured an alcoholic solution of the substance which it is desired to vaporize; the wick is then to be lighted, and the flame extinguished as soon as the ball becomes red hot, which requires but two or three minutes. The ball is now fed continuously by the wick, and will continue red hot as long as any fluid remains in the bottle, and, in this condition, it will readily vaporize the substance in solution, minute particles of which are thus scattered throughout the atmosphere. A bottle holding two ounces will throw out a constant stream of vapor for about sixteen hours, at an expense not exceeding twenty cents."—(*Med. Record.*)

Electrolysis.—"Dr. A. D. Rockwell, New York (*N. Y. Med. Journal*), refers to the relations which the very interesting and suggestive phenomena recorded sustain to the practical application of electrolysis in the treatment of disease, which are not sufficiently understood to render the subject a complete or exact science. Clinical experience teaches that living is more readily electrolyzed than dead tissue. This is accounted for from the fact that living tissue is capable of the process of absorption, and that its solutions are warmer and therefore better conductors. When, therefore, a tumor capable of being electrolyzed is submitted to the action of the galvanic current, a threefold action is produced:—1. Its fluid constituents suffer decomposition. Hydrogen and alkalies, soda and potassa, go to the cathode, and oxygen and acids to the anode. While electrolytic action thus takes place at both poles, it is evident that this action is most vigorous and more readily produces absorption in living tissue at the cathode. At the anode, however, decided chemical action takes place, and successful results are obtained by it. But since electrolytic action is modified by the composition of the electrolyte and the character of the poles, it is probable that a more extended clinical experience will establish more definitely the important fact that some conditions of disease are most successfully treated by the positive, and others by the negative pole. 2. Absorption is hastened by the chemical effects of the current and the mechanical and irritating effects of the needles, and may slowly continue for weeks. 3. Disintegration and atrophy take place. If the part acted on by the current be a small wen, wart, or nævus, the tissue may become changed in color, dried and shriveled, and almost entirely disappear during the operation.

"In treating the various forms of tumors, aneurisms, and varicose veins, serous effusions, wounds, and ulcers, both poles may be made to operate simultaneously; or, if only the negative pole is used, the current is completed by placing the positive, connected with a sponge-electrode, on a neighboring part."—(*Ibid.*)

"*Galvano-caustic Polypus-snare.*—This is a very neat instrument, and consists of a combination of the ordinary polypus-snare with the galvanic cautery. A thick platinum wire is used for the snare, and is

capable of being made red hot by a galvanic current, the handle of the instrument receiving the poles of a battery, contact being made and broken at will by moving an appropriate slide. With this instrument Billroth has lately removed part of a sarcoma from the posterior nares, a melano-sarcoma from the rectum, and another tumor from the fauces. He first included the neck of each tumor in the loop of the snare, tightening the wire up by turning the screw-handle until the tumor was just grasped. Contact was now made, and a gentle turn of the handle once more drew the hot wire through, the tumors coming away painlessly, and in two cases quite bloodlessly. Amputation of the penis, in a case of epithelioma of the organ, was also done by means of the same instrument. In this case no preliminary arrest of the blood-flow into the penis was made, and no blood was lost in the operation (May 16th). On June 9th a second operation was done—that of slitting the urethra and sewing its edges to the skin around."—(*Med. and Surg. Reporter.*)

"*Protoxide of Nitrogen produced from the Action of Sulphurous Acid Gas on Nitrous and Nitric Acid.*—It is a generally admitted fact that nitric acid, after it has been used for the manufacture of sulphuric acid, passes into the condensation chambers in the state of nitrous vapors; but, recently, Weber, through some experiments, has proved that protoxide of nitrogen was formed at the same time. The bioxide of nitrogen, mixed with half its volume of sulphurous acid and a little water, produces but a very small quantity of protoxide of nitrogen. On the contrary, when a brown solution of bioxide of nitrogen into a ferous sulphate is mixed with a large quantity of water and sulphurous acid, a large production of protoxide of nitrogen takes place, and decoloration ensues.

Protoxide of nitrogen is more easily formed by the action of sulphurous acid on nitrous acid than by the action of the first on bioxide of nitrogen."—(*Jour. of Applied Chemistry.*)

"*Reactions of Soluble Glass.* By F. A. Fluckiger. Translated by E. Waller, E.M.—Vogel has recently demonstrated that in mixing concentrated solutions of silicate of potassa, and borate of potassa, which contain an excess of caustic potassa, silicic acid is separated. Several investigations have directed the writer to the general law, that, *the salts of potassium, sodium, lithium, and ammonium most readily soluble in water, have especially the power of separating silicic acid from concentrated solutions of soluble glass.* For instance, the following salts possess this property in cold saturated aqueous solutions: of the ammonium salts, the chloride, bromide, sulphide, phosphate, molybdate, nitrate, acetate; of the sodium salts, the chloride, nitrate, nitrite, arseniate; and among the potassium compounds, the iodide, sulphide, sulphocyanide, tartrate, and acetate.

"Though most of these salts, by slight dilution, quickly lose this property of separating silicic acid, several ammonium salts retain it to a considerable degree. If, for instance, one mixes a solution of silicate of soda of sp. gr. 1·392 with 29 parts of water, and adds a few drops of a sal ammoniac solution (1 : 8 of water), there results, with gentle warming, a separation of silicic acid, though here hardly two per cent. of the silicate is in the solution. With only ½ a per cent. of silicate present, chloride of ammonium will hardly cause, after some time, a

slight cloudiness, while both sulphocyanide and nitrate of ammonia will immediately precipitate silicic acid in it.

"Cold saturated solutions of bromide of potassium or chloride of potassium do not decompose the soluble glass solution referred to, at ordinary temperatures, but do so readily when warm. Sulphate of soda, also, does not act when warm, if cold water has been saturated by the crystallized salt (Glauber's salt); but if the Glauber salt is dissolved in so little hot water that one part of anhydrous sulphate exists in two parts of water, the silicate solution, brought to the same temperature, will be precipitated by the sulphate of soda.

"The relation of the nitrate of soda to the soluble glass solution tested by the writer, is worthy of note. With a sp. gr. of 1·392, this left behind after evaporation and ignition 62·8 per cent. residue, which, beside the silicate, contained small quantities of chloride of sodium, and sulphate of soda. This solution contained so small an excess of alkali that the first drops of alcohol, or an acid solution of any kind, gave a precipitate. If now this soluble glass was decomposed with a solution of nitrate of soda in one part of water, silicic acid separated. If, however, one added nitrate of soda to two parts of water, and mixed equal parts of this solution with the soluble glass, no precipitate resulted. If, however, the mixture was warmed up to 54° C. the silicic acid separated in gelatinous form and the mixture almost entirely solidified. If the experiment was conducted in a flask, and the flask was then suddenly brought back to the ordinary temperature, or cooled down to 0°, the separated gelatinous precipitate redissolved as quickly. This experiment one can repeat at pleasure.

"Caustic ammonia, sp. gr. 0·921, with a solution of soluble glass, sp. gr. 1·392, gives a copious precipitate of gelatinous silica. If the flask is closed and warmed, the precipitate soon redissolves. Only this all depends upon the proportions of the mixture. In ten parts of the silicate solution one part of ammonia causes no change. If one increases the amount of alkali to two parts, the greater part of the silica is precipitated. If the mixture is warmed in a closed flask to 90° C., re-solution of the precipitate soon takes place. After cooling, the gelatinous silica again forms. If one mixes six to eight parts of the soluble glass with one part of ammonia (both solutions having the degree of concentration above mentioned) in a closed flask, at about 30° C., a quite clear liquid is obtained, which, however, at a moderate temperature, very soon separates into two layers of nearly equal volume. The upper layer was slightly yellowish, of sp. gr. 1·064, and left on evaporation and ignition not over nine to ten per cent. residue. When this was repeatedly treated with dilute nitric acid, hydrochloric and sulphuric acids were found abandant in the filtrate. The lower layer was syrupy, entirely colorless, and gave thirty-eight to forty-five per cent. ignited residue, in which there existed notably either no chlorides and sulphates or very slight traces of them. Though the light liquid soon gave off ammonia on warming it, the same alkali was persistently retained by the heavy liquid. If, however, the latter was evaporated to dryness, the purest, most colorless glass remained, which, when boiled with caustic potash, disengaged ammonia.

"A drop of bromine, or a jet of chlorine gas, immediately separates silicic acid from a soluble glass solution. Iodine is unable to effect this reaction. But this property is possessed in the highest degree by crea-

sote from boxwood and phénol (carbolic acid). Also pure chloral-hydrate, which leaves a silver solution and litmus-paper quite unchanged, is in a form to decompose the silicate of soda in concentrated aqueous solutions.

"Dilute solution of the white of a hen's egg, and a solution of glue, also precipitate silicic acid. An emulsion of almonds separates no silica. It has long been known that gum-arabic also causes the decomposition of soluble glass. The precipitate contains no gum, but after washing consists essentially of silicic acid. Its formation is, however, affected by the amount of salts that the gum contains. A gum solution decomposed by HCl, and dialyzed, after thorough neutralization with ammonia, gave no precipitate in soluble glass. Sugar, dextrine, glycerin, etc. have no power to separate silicic acid."—(*Repertorium der Pharmacie* and *American Chemist.*)

"*Quiet Ebullition of Liquids.*—It is of great importance in many analytical and technical processes, that the liquids with which one is operating should boil quietly and with regularity, without that fitfulness and bumping with which all are familiar. It is in this connection that attention is directed to a communication of Th. Schumann, according to which this object may be accomplished in most cases by the following method:

"A glass tube about one-eighth inch in diameter is taken; this is melted shut at one end, and bent into the form of a hook, while the other end is left open. The tube, which should be about an inch shorter than the distance from the stopper to the bottom of the retort, is then hung by a string from the tubulure. As the liquid is heated, the air in the tube expanding gives rise to bubbles, which regularly ascend; and when the boiling-point is reached, vapor of the tension of the atmosphere is formed at the open end of the tube, and the process of ebullition is carried on for days with regularity and quietness. When an operation is interrupted, or the retort filled with fresh material, it is necessary to remove the tube from the liquid, and then to introduce it afresh.

"C. Wilkelhofer recommends for the same object that an artificial generation of gas should be kept up in the liquid during the operation, which he accomplishes by passing a galvanic current through it. The action of one of Bunsen's elements, of ordinary size, is said to be sufficient for the purpose, the wires being of copper or of platinum, as the nature of the boiling liquid may require. It is plain, however, that this plan can have but a limited application in practice."—(*Scientific American.*)

"*Fabrics rendered Uninflammable.*—The best ingredients for this purpose are a mixture of borax and sulphate of magnesia, or a mixture of sulphate of ammonia and sulphate of lime."—(*Ibid.*)

"*Gold Bronze.*—Pure gold bronze powder may be made as follows: grind leaf gold with pure honey until the leaves are broken up and minutely divided. Remove this mixture from the stone by a spatula and stir up in a basin of water; the water will melt the honey and set the gold free. Leave the basin undisturbed until the gold subsides.

Pour off the water, and add fresh instead, until the honey is entirely washed away, after which collect the gold on filtering pans and dry for use. A cheaper sort may be made thus: melt one pound of tin in a crucible and pour it on one-half pound of pure mercury; when this is solid grind it into powder with seven ounces of flowers of sulphur and one-half pound of sal ammoniac."—(*Boston Jour. Chem.*)

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Submersion Microscope.—"R. E. Dudgeon, M.D., describes under this name, in the *Quarterly Journal of Microscopical Science* for July, 1871, a contrivance by which the objective of an ordinary microscope can be plunged in water without affecting its optical qualities. A brass tube with its lower end closed water-tight by a flat disk of glass is slipped over the objective from below so far that the glass disk is considerably within the working focus of the lens. Thus protected, the lens can be lowered into water, syrup, glycerin, etc. to a depth limited only by the mechanism of the microscope or the length of the protecting tube, and used to view objects floating in the liquid or lying on the bottom of the vessel containing it. While the common 'tank microscope' can be worked best somewhat horizontally, through the side of the tank, this arrangement, besides being applicable to much higher powers, is adapted to give a more or less vertical view, being entirely free from any tremor on account of the motion of the top of the water, and is therefore especially useful for dissecting purposes. Its object, though not its method, is identical with that of Tolles's immersion objective for low powers, published more than two years ago; though the latter naturally possesses, being constructed especially for this use and dispensing with two unnecessary surfaces of glass, some optical superiority as well as a much longer working focus. The submersion tube, being applicable to ordinary lenses, only slightly lowering their magnifying power and considerably shortening their working focus, will doubtless be extensively useful; though the statement that it may be always retained in position as a protecting cover to the lens without impairing the definition or illumination in ordinary work, must be considered as too enthusiastic. It is especially applicable to lenses of from one inch to one-quarter inch focus (the latter limited to a very small angle), and the objects should be placed in a jar or tank having the bottom and at least one side quite smooth and transparent."—(R. H. W., *Amer. Naturalist.*)

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Rust Preventive.—A correspondent of *The Lancet* states "that the following will prevent rust on all steel articles: Take equal quantities of strong mercurial ointment and spermaceti ointment, and mix well in a mortar. Well grease a small piece of flannel, rub the article, leaving a thin film of the ointment on it; then grease on one side a narrow strip of well-dried demy paper, and wrap it diagonally round the article if possible. This will be an additional preventive to the access of damp or air. Leave the handle out. This has been used for above forty years, and articles so treated rarely or never rust, though not looked at for five or six years. Should they rust, it will be at the hilt of the blade from the paper wearing from pressure. A little extra greasing will take the rust out, but it will leave the mark. It is a capital article for greasing screws which may have to be withdrawn."

"*New Light for the Use of Photographers and Others.*—Photographers have long been seeking for an artificial light, so readily available that the success of their manipulations may not be wholly dependent on the sun, and subject to the caprice of the clouds. The last attempt to find the much-needed substitute is by digesting zinc in the iodide of ethyl, a process which yields a liquid substance inflammable by the mere contact of the oxygen in the air. By passing pure hydrogen (or perhaps ordinary illuminating gas) through the fluid, the compound of zinc and ethyl will volatilize into the gas, and will yield, on combustion, a flame of extraordinary brilliancy and vivid whiteness of color. It is said that the actinic effects of this light are inferior to those of combusted magnesium; but the steadiness of a flame from a gas will so far surpass any that can be obtained from a burning metal, even when the latter is of the highest purity chemically obtainable, that most photographers will doubtless give it the preference."—(*Scientific American.*)

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Gas Autogène.—"A new apparatus for gas-making has just been introduced by M. Rouille in Paris, by which gas can be produced economically, and with the simplest apparatus, in houses, manufactories, etc. The inventor has named this gas, 'Gas Autogène.' It is formed of air and steam of essence of petroleum. The apparatus is not only very simple, but occupies a very small space. An apparatus for the supply of 1000 burners does not occupy more than a square yard, and for a less number, in proportion. The gas is said to give a much more brilliant light than ordinary gas, and to be much cheaper. In fact, it is stated that half a cubic yard of 'gas autogène' gives as much light as a cubic yard of ordinary gas, and that it costs only three cents per cubic yard. An apparatus, with reservoir complete, for fifty burners, is manufactured at the price of £24, and one ditto for one hundred burners, for £40."—(*Ibid.*)

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"*Blowpipe Lamp.*—Can any of the readers of the *Scientific American* tell me if it is safe to convert common lamp oil (petroleum) into gas on a small scale for blowpipe use? Having had the experience that alcohol is too expensive, I tried to find a substitute for it. The receptacle for oil should be cylindrical, three inches in diameter, and about the same height, being heated by a lamp under it, fed with the same oil. Would the oil explode if heated so as to give gas, which would, under some circumstances, be above its boiling-point? I think this a question of general interest, especially for watchmakers and goldsmiths, who have to use hard solder."—(A. K., *Ibid.*)

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Carbolic Acid deodorized.—According to the *Chem. News*, "when quite pure—that is to say, free from other constituents of tar—carbolic acid has no disagreeable smell, and may be used by being dissolved in strong acetic acid, and next diluted with water. In the liquid thus obtained, the smell of acetic acid prevails, so as to make the peculiar odor of the carbolic acid quite imperceptible."

THE

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ORIGINAL COMMUNICATIONS.

NITROUS OXIDE INHALERS.

BY A. J. REDERICK, SIOUX CITY, IOWA.

In administering nitrous oxide gas with any of the inhalers in use, I have noticed a difficulty in breathing, manifested by the patient opening the corners of the mouth—not grasping tightly the inhaler. This occurs in patients of large, healthy, strong lungs, where the capacity for full inhalation is good.

By enlarging the holes of the valves with a bur drill, so as to produce a capacity greater by fifty per cent., the difficulty, to a certain extent, is remedied,—but not enough to admit free, full, and natural respiration. Another objection to inhalers for oral surgery (I think a great one) is the necessity of using the mouth as the medium for conveying gas to the lungs. There is difficulty in excluding atmospheric air when a cork is placed between the teeth for keeping the jaws apart, or opening the mouth when anæsthesia is induced where no cork is used. The time lost in reapplying the inhaler, when a number of teeth are to be extracted, is also an objection, considering the transitory nature of nitrous oxide.

By dispensing with the mouth these last difficulties can be overcome; by making valves of greater capacity, the first will be met.

With these objections and difficulties in view, I constructed two valves of a capacity three times greater than the ones in the old inhaler; also a tin tube seven inches in length and seven-eighths of an inch in diameter; placed the inhaling-valve at the end, which is inserted into the tubing leading from the gasometer (I give gas direct from the gasometer), and the exhaling-valve about three inches back of this into a tube mounted upon the main tube of about equal capacity. The rubber used for the valves which answers perfectly to the demand is a piece of Barnum's rubber dam.

The inhaler, at this stage, admits free, full, and easy breathing; no

gas is lost, as the capacity is not too great for perfect working of the valves. This remedies the first objection.

To remedy the second, I soldered at the mouth end two tubes, each one inch and a half in length and half an inch in diameter. These were placed into the main tube by slightly flattening the ends. Rubber tubing is placed on each of these tubes. In administering the gas, place one of the tubes into each nostril. By flattening or doubling upon itself it will readily enter, and upon resuming its shape through the force of its elasticity, will effectually close the nostril, even distending the alar fibro-cartilage and its appendage.

The inhaling-valve is closed or opened by means of a tube sliding back and forth inside of the main tube. In extracting a number of teeth, the inhaler need not be removed when the patient is under the influence of the gas; but the valve should be closed until the anæsthetic effect is passing off, when it should be opened and the mouth closed with a napkin held by the hand closely, to exclude atmóspheric air; proceed to extract until the effect passes off, when you again open the valve, close the mouth, and readminister gas. Very little gas is needed in these intervals.

Such is the construction of the inhaler I have been using over three months. I shall make one of silver, and, should any improvement in the shape of the nosepiece suggest itself (I think if they were bulbous it would be an improvement), I will take advantage of the suggestion.

Any hints from professional brethren will be acceptable.

POPULAR EDUCATION IN REGARD TO THE TEETH.

BY S. J. COBB, NASHVILLE, TENN.

A GREAT deal has been said by the profession about educating the people to appreciate their teeth. The difficulty has seemed to be in adopting some method by which we could accomplish the work. Some are in favor of one way and some of another. Short, well-written articles for daily journals are advocated by some; local society periodicals by others; a good many seem to think a people's dental journal would do a good work. In addition to these, I suggest dental lessons for school books, which I think would enable us to get at the masses; and the more I think of it the more I feel convinced of the fact. Health lessons in school books will force themselves upon the people. Every branch of medicine ought to furnish its quota of these lessons. A few simple, well-condensed, anatomical, physiological, pathological, chemical, and hygienical lessons, representing each department of medicine, and introduced into such school books as are suitable, will be invaluable to the next generation, and to all others that follow.

There is another means of enlightening the people in regard to their teeth. Every practitioner can do a good work by teaching his patients. I make it my business never to let any one occupy my chair long without giving a few words of advice about the teeth. In addition to the use of toothpicks, brushes, soap, powder, or dentifrices, I advise mouth mirrors for the purpose of examining their teeth. I have come to the conclusion that the introduction of these into general use would be a good means of instructing the people. Mirrors are wonderfully attractive to the eye, and we would do well to see that it—the organ of sight—is interested in this matter. It is nothing more than natural to want to see ourselves; hence I am in favor of looking-glasses. Let us have them of all shapes and sizes necessary to see as much as we desire. These little mirrors in the hands of the people will soon find their way into their mouths, and as they do they will show many things necessary to be done for the preservation of the teeth. How handy they would be for those who have had many fillings inserted, to see that they were all bright and clean, and without signs of leaks! also, to see that other teeth do not decay without their knowledge! They would also be important to mothers in the examination of their children's teeth. I am so thoroughly convinced of the beneficial results of their use, that I feel it to be my duty to make an effort to introduce them. I hope others will see and feel likewise. A small effort upon the part of the profession will be sufficient to get them into general use.

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

(Concluded from page 535.)

Fourth Day—Morning Session.

Called to order by the President.

Resolutions instructing the Treasurer to notify members of their dues, and also instructing the Corresponding Secretary to notify standing committees of their election, were passed.

Dr. Goddard offered an amendment to the constitution similar to that rejected the day previous, allowing the time of meeting to be annually fixed. Laid over.

The Committee on Nominations made the following report, which was subsequently adopted,—and the committees so constituted:

Dental Physiology.—J. H. McQuillen, M. S. Dean, C. F. Wheeler.

Dental Pathology and Surgery.—Homer Judd, W. H. Atkinson, C. Stoddard Smith.

Dental Histology and Microscopy.—R. W. Varney, J. Taft, W. W. Allport.

Dental Chemistry.—D. S. Dickerman, H. A. Smith, J. J. Birge.

Dental Therapeutics.—W. L. Sage, J. R. Walker, W. N. Morrison.

Operative Dentistry.—C. E. Francis, E. A. Bogue, Wm. Dutch.

Mechanical Dentistry.—I. A. Salmon, F. Hickman, J. H. Smith.

Dental Education.—A. B. Robbins, C. C. Chittenden, J. N. Crouse.

Prize Essays.—Geo. A. Mills, E. Floyd, R. Huey.

Etiology.—W. A. Bronson, L. D. Shepard, G. R. Thomas.

Dr. Taft favored the appointment of a committee whose duty it should be to go at the solicitation of the profession to give clinical instruction. He thought the association ought to initiate and carry on a work of this kind. Individuals are constantly receiving invitations to go to various places, and their expenses or more are tendered. It would be better for them to go under the auspices of this society.

Dr. Dutch coincided with the views of Prof. Taft. The plan had already been proposed on the Pacific coast. The expense ought not to be borne by the association, but by the parties benefited.

Dr. Dickerman also indorsed Prof. Taft's views. If this action is not taken by this body, it will be by some other body.

Prof. Taft then moved that a special committee on Local Societies and Conference with the Profession be appointed by this body.

Carried, and the following committee appointed:

Prof. Homer Judd, St. Louis, Mo.; Prof. J. Taft, Cincinnati, Ohio; Prof. W. H. Atkinson, New York City; Prof. L. D. Shepard, Boston, Mass.; Dr. Wm. Dutch, San Francisco, Cal.

The report of the Committee on Etiology, by Prof. Cutler, was then read by Dr. Taft. The following is a synopsis of the report:

Etiology was defined to be the science of causes; dental etiology the causes of dental diseases. Causes always precede effects. If a cause produces no effect, it is dormant. The causes of dental caries will be first considered. We quote from Tomes, the best authority extant, but we shall endeavor to point out many errors in his conclusions. Tomes says two theories have been adopted: the first considered caries as a vital action, the result of inflammation; the second regarded it as wholly the result of chemical action. Fox endeavored to show that it was similar to osseous caries, and due to a separation of the lining membrane. Bell considers that it is the result of inflammation of the dentine. Mr. Robertson assumes that it is nothing more than chemical decomposition. The opinion of Fox cannot be correct, because there is no connection between the pulp and the inner wall of the tooth—other than nerve fibres. He could have had but limited knowledge of the anatomy of the teeth. Nothing could be further from the truth than Bell's ideas. Robertson assumes that tooth-substance is

devoid of life, which is incorrect, though this is even now maintained by able men.

Tomes thinks the dentine loses its vitality from systemic causes, and then becomes a prey to the destructive agents. We all know better at this day; a tooth decays when the vitality is intact. The process is purely local and chemical, favored, however, by crowded teeth, lodging of food in the interstices, etc., which generates acid in decomposing. There are great differences in teeth as to resisting decay, depending on the relative proportion of animal and mineral components, and on constitutional tendencies. The slower the process of development, the more dense the structure. The condition of the mother during gestation influences the teeth of the child. Subsequent systemic changes alter the condition. Bell thinks mercury is one of the remote causes of decay after the formation of the teeth. I accede to this to a certain extent. Hippocrates believed that cold caused decay; other authors, that it was due to an arrest of circulation by the pressure laterally. French writers of the last century believed in the local action of chemical agents to produce the result, as did Salmon, of London, two hundred years ago. It is said the Indians knew nothing of bad teeth or debilitated stomachs till after the introduction of tea,—but it is more likely that the contact of civilization in general was the cause. Dr. Mitchell demonstrated, in 1796, that caries was due to an acid in the mouth. Harris says acetic, lactic, and other acids have been detected in the saliva. Donne says that the saliva is normally alkaline, but the mucous secretion acid. Harris says that Dr. Parmley, about 1821, first promulgated in this country the doctrine that decay was due to external agents. Prof. Westcott, in 1843, proved that all the acids act readily upon the teeth. Harris asks how, if caries is always due to external agents, does it sometimes commence within? I answer that it never does. Its attacks are always external; but it may be gradually going on without external sign. Tomes says all carious cavities are circumscribed by a zone of consolidated tubuli, varying in different specimens; all the tubes may be filled, or only a portion of them. This is analogous to that condition in the soft parts which circumscribes inflammation by consolidation of the surrounding tissues. It retards the advance of decomposition and protects the pulp from irritation. It is like an army falling back gradually, constructing lines of defense and holding each as long as possible. I am not able to see the point in his comparisons. It would appear that he regards the tubuli as unoccupied channels through the dentine, which I am not prepared to admit; if it were true, what causes sensitiveness? The tubuli are, no doubt, filled up to a certain extent, but the material is necessarily derived from the secretions of the mouth becoming hard by desiccation, and like tartar preservative of the dentine. I regard the process as a molecular one, independent of vitality.

When decay attacks dentine, there is an invasion into vital and mineral tissues which have before been under vital control alone, by vital and chemical agencies combined. When decay is established, the part is under chemical control alone; it overcomes all resistance by satisfying affinities that are stronger than the vital force. It is true that the greatest density affords the greatest resistance to decay; but want of density signifies imperfect development; as the animal per cent. is about the same in all. Prof. McLain says the chemical theory being now generally admitted, the physico-defective theory can be considered only as one of the proximate causes. Imperfections favor decomposition only by affording lodgment to foreign matters which are converted into an acid product; or acids already formed may be taken in; which, often repeated, produces decay. I fully concur in these views. Maury says authors have never agreed as to the cause of caries; some have regarded it as hereditary; others as necrosis; and others still as among the ulcerous affections. We believe it is due to external and internal causes; external being blows, contact of cold and hot substances, or acid drinks; malformation, lateral pressure, malaria, mercury, uncleanness, and irregularities. He enumerates internal causes, which have already been mentioned. Fitch says a vitiated state of the saliva is the first general cause. Lead, tin, and copper are soon dissolved in it, and gold when scarcely acted on by nitric acid is tarnished; ivory soon decays; and it is not strange that teeth also are acted upon perniciously. Uncleanness vitiates this fluid; decaying food, decayed teeth or roots, etc. In summing up, we say that decay of the teeth is dependent on violations of physiological law. Some of the foregoing opinions are erroneous, owing to the fact that there has been no established canon for the profession to be governed by; every one had his peculiar views. The most modern, and in the opinion of the committee the nearest true, if not the true cause of caries, is the chemical theory of an acid action as the only direct local action. The effect is the same, however the acid may get into the mouth, depending, however, upon the condition of the mucous and digestive appendages. Modern civilization gives evidences of violated law, which not only causes decay of the dental organs, but also other pathological conditions which are suicidal, by shortening the natural term of human life.

The report of the Committee on Operative Dentistry was then called for, and was read by Prof. Taft.

The report proposed merely a statement of a few points. That of last year was very comprehensive, embracing all points of interest up to that time. Progress is being made, not alone of a mechanical character, but there is a growing domination of science over art, of principles over manipulation. Though there are no startling facts in reference to modes of procedure in operating, forward steps are being made.

There is a far greater disposition to adopt new processes, which is instanced in the increasing use of the rubber dam, a knowledge of the use of which carries with it a conviction of its utility, and usually its immediate adoption.

There is a growing disposition to use greater care and thoroughness in the operation of filling. The object is not attained without a careful attention to every step; an imperfect link involves a broken chain. We suggest that the profession strive to come up to attainments already made.

The use of glasses is recommended, as tending to reveal imperfections and irregularities which by the unaided vision will escape observation. Their discriminating use will be of benefit to every one, and will not be injurious to the unimpaired eye, as is often supposed.

In the use of foil some change has been suggested, viz., the use of smooth and polished points for its introduction. It is claimed that these may be substituted for serrations in all cases, even in building up crowns, and that the results are much more perfect. However this may be, it is quite certain that by the proper use of such points, foil may be thoroughly welded. It is claimed that with them the gold will expand more, and thus be more perfectly adapted to the walls, with less liability of injury to the latter. A frequent cause of failure is the injury done to the margins of cavities. The occasional use of these points was adopted by a few persons two or three years ago, but their exclusive use has been only for a few months. A claim to this use has been made by three or four persons, but no one has been so enthusiastic in their favor as Dr. A. A. Blount, of Springfield, Ohio. The introduction of a change like this will not be rapid, even though it is found to be a step in advance. The use and proper place of heavy foils is more definitely ascertained than at the time of the last report. A few use them exclusively, but the majority employ them after the cavity has been chiefly filled, to form the surfaces and borders, for which purpose they are better adapted than anything else. It is stated that No. 480 can be used; its practicability to any extent, however, is doubtful, although from six to ten thicknesses of No. 60 can be easily and thoroughly welded,—but the laminæ must be kept free from folds.

For non-metallic fillings, Guillois's cement seems to possess greater hardness than any of the kindred preparations, and many operators employ it as a permanent filling. Its efficiency for this purpose, however, is not sufficiently demonstrated,—but as a foundation for a gold filling it is very valuable. It is probably allied to oxychloride of zinc.

The machines for excavating cavities and finishing fillings have been much improved since the last meeting, when their utility was a matter of doubt. Now, in two of them such is the perfection and efficiency, that a first view carries conviction of their usefulness, and they are

now regarded as indispensable to the most thorough and rapid execution of the operation of filling. Improvement is taking place in every department of human activity, and we cannot venture to assert what is in store for us, or what shall be brought to us upon the great tidal wave of progress. We can, however, admire, appreciate, use, and rejoice in all the blessings already bestowed upon us.

Dr. Atkinson. If the concepts of the mind in attempting to understand our practices are foundlings, we are much in the dark.

Prof. Judd. I have experimented with smooth points, and cannot work quite as well with them as with points slightly serrated, because if the instrument is not placed perpendicular it is a little apt to slip. If it is a sharp-edged instrument, the same office is performed by the edge as would be by the serrations. I have used planishing points, and can work very well with them. I have used platinum foil a little. That used was heavier than ordinary gold foil. It is coated with gold foil to secure the adhesive property. A filling made of it looks like a gold filling before finishing, but after finishing presents a mottled appearance.

Dr. Atkinson. I endeavored to get platinum foil beaten in 1845, but never succeeded until within a year. I thought that platinum, osmium, or some of that group ought to be capable of use in this way. I still feel that if we have pure platinum rolled, it will weld. I have used a thickness corresponding to No. 120, which makes the best filling. As to points, I use the egg-shaped planishing points. Welding is the annihilation of space between particles. If we understood the laws of impact and welding, we need say nothing about these matters. Not one per cent. of practitioners understand the proper preparation of cavities, —to prepare the cavity so as not to expose the pulp; then so that the gold may be mechanically retained. Don't be afraid of cutting too much. I don't cut enough myself, and I am called heroic. Little fissures are too often left. Cut freely and largely, and don't do any of this "*that'll do*" kind of work. Do not remove the decayed bone and expose the pulp. Nature has built that house; don't pull it down. Cut to solid tissues around the wall,—saturate with thymol, which says, Peace, be still, to all the little devils in there!

Dr. McQuillen spoke of the importance of a thorough examination of the teeth. It cannot be done with the naked eye, but demands the employment of magnifying-glasses. The professional man should be paid for his opinion, which it costs him time to give. A microscopical opening may lead to an extensive cavity below, and he would impress upon all the necessity of using magnifying-glasses. He spoke also of the matrices proposed by Dr. L. Jack for approximal fillings, as of great value; simplifying the operations, and rendering success in such cases more certain than without them.

Dr. Taft referred to the use of glasses upon the eye. He used two pair of glasses at once, but as a substitute had constructed a pair with a lens attached at one and a half inches distance ; is much at a loss without it. It is common to suppose that the use of glasses impairs the eye, but our best oculists concur that there is no objection to the use of glasses on the unimpaired eye. The microscope may be used for a lifetime without detriment,—the eye-glass of the watchmaker is so used. The sight has been improved in his own case in the eye to which this glass has been fitted. There is a want of precision in trimming the borders of cavities without glasses. They should be used constantly.

Dr. Francis. We cannot make our examination thorough without glasses. I always advocate cutting out fine fissures. It is dangerous practice to cut to the pulps. What better covering can we have than the natural one ?

Dr. Crouse does not lay quite as much stress on glasses as some do whose sight has partially failed. Thorough examinations are necessary, and the rubber dam should be applied for this purpose ; also, free separation should be made by wedging, so as to be certain in regard to decay.

Dr. Morgan indorses all that has been said in reference to thorough examinations, also as to cutting out fissures, especially in molars ; has used the magnifying-glass for many years. It is fair to presume that partially decayed matter is not dead ; it is certainly tolerated. Heavy foils can be planished down very perfectly.

Dr. McQuillen. It is impossible for any one to see small objects as perfectly with the naked eye as with a magnifying-glass. Engravers have used such glasses for ages.

Dr. Francis indorses what has been said in reference to the dam. Glasses include mouth mirrors, and even these he believes are often not used. He spoke of a cavity which externally gave no signs of its presence, except that there was a slight seam on the grinding surface, and the tooth was a little opaque, which being investigated, led to an immense cavity approaching the pulp.

Dr. Atkinson. No human eye unaided has yet detected tissues, or any of their individual elements.

Dr. Dickerman used smooth points four years since with little pressure, and latterly fills mostly in that way, and makes better fillings than with so much pressure or with the mallet.

Dr. Dutch claims that some persons have better eyesight than others ; mentioned a gentleman who could see fine cracks in the enamel with the naked eye, where only a glass of high power revealed them to others. He cuts out fissures well.

Dr. McDonneld indorses all that has been said ; has not yet arrived near perfection in making examinations ; indorses the dam and mag-

nifying-glasses fully. Fissures can be discovered with the glass which cannot with the eye alone,—even with the best eyes. We are not thorough enough in cutting down weak walls and following out fissures.

Dr. Walker thinks we come to the conclusion every year that last year we did not know how to fill a tooth. He would not continue practice without the dam. The power of the best eye can be extended by glasses. Fissures will often lead to an unsuspected chamber.

Dr. Salmon. Any one who acknowledges the use of the microscope will acknowledge the use of glasses. He mentioned some one who is in the habit of using ivory points, and commends trying the method in crown cavities which are accessible.

Dr. Crouse explained that he thought in many cases glasses were desirable. When you can't see with the naked eye, be sure to use them.

Dr. McDonneld spoke of the use of the rubber dam. We should not condemn it for want of skill in its use. He had failed, and abandoned it, but afterwards tried again and succeeded.

Dr. Judd called attention to the word approximal which is often used. There is no such word.

The Committee on Mechanical Dentistry was then called, and Dr. W. N. Morrison made a report.

The report stated that the committee were unable at the time to present anything of practical benefit which had not already been noticed in the dental journals. The different styles of work stand in the same order that they have for years, continuous gum and gold being at the head of the list. The so-called cheap materials, rubber, celluloid base, pyroxyline, porcelain base, aluminium, and the alloys of tin, have each their advocates, but upon the superiority of either we are unable to agree. The committee were inclined to believe that the demand for these cheap bases is occasioned by the want of teeth in proper variety and form for gold work.

Dr. Walker, from the same committee, recommended Watt & Williams's metal as the best substitute for rubber that we have now. Had not tried collodion.

Dr. Floyd, from the same committee, prefers gold to everything else; uses a little rubber in temporary cases; cannot consider it equal to gold; had used the cheoplastic metal, but does not approve of alloys.

Dr. McDonneld found that black rubber would cure a congested condition of the mouth. Gold and continuous gum are the best; cheap things are dear.

The Committee on Dental Education was then called, and Dr. Atkinson read a report from Dr. Mills, Chairman.

The report stated that every avenue was teeming with the spirit of progress; the associative effort has done a noble work, not so much in the older localities as over the whole land. How shall we best extend

the resources of dental education? We have a right to expect much of those who stand out as representative dental educators. Gentlemen, speak out of your convictions, the fruit of experience and of toil. Tell us, must we go deeper ere we can safely go higher? Do we need to divide, regulate, separate, that we may better understand our work? What is our mission? Do we answer, as one man, it is a God-given, a God-loving one? Or do some among us call it a mission of dollars and cents? Our mission is of God. We are to repair the ravages of this disintegrated structure; shall we attempt to repair without knowledge of that structure? Tell us what we need to understand, that we may think and know for ourselves. The associative element has proved itself the great auxiliary in dental education; it brings us into a receptive condition; mellows the soil of our nature, and lets in the sunlight of brotherly love. Association is to us as the plow in the tilling of the soil. May those attending this body go out to be known and read of all men, that they have been with truth and learned of it! The rudimental teachings have been and will be received in the dental office. No dentist or faculty should encourage an applicant to enter a dental school before spending a year or more under private teaching. The dental schools are doing a noble work; they show an increased tendency to meet the demands of the times. Whether they are meeting these demands is a question seriously agitating the minds of many. A combination of the best ability of our profession should now be made, and this United States be the proud possessor of an American dental university,—not to substitute the dental schools, but to meet the higher demand that is upon us. Would to God that this noble profession might be the first to throw out to the millions the motto,—"Obedience to the truth."

Strip us of our meaningless titles, attached so freely; because of the freedom with which they are dispensed they are become a stench to all true lovers of the truth. These words, spoken in sorrow, are the truth. With all the worth of the schools, they are terribly deficient. The responsibility must rest chiefly on the faculties; they have the power to reject unfit applicants. It were better to lessen the quantity and better the quality. Furnish first-class teachings, and you will secure first-class pupils. Schools need encouragement, and also to be shorn of much. We see much to admire, and much to regret; some things are clear, much is misty. Yet in view of all their deficiencies, if we turn to the past, the comparison renews our spirit. But a few years back there could be found in New York dentists who denied to their students the use of books; and in one instance, a work in the possession of a student was obtained by theft and committed to the flames! And this not among quacks, or "gutter dentists," but among those who walked in high places. Education teaches knowledge of obedience to

law. We are groaning under the penalty of a broken law. We are crawling backwards to reach the bottom of the ladder. It requires courage to go down, and also to go up. Let us strip ourselves of old dogmas, and search only for the truth. Those who apply for admittance must be impressed with the necessity for certain qualifications. There are found in all our schools those who possess hardly a scintilla of the requisites in the specialty they are seeking,—some have not the first teachings of the common branches. Ask the classes admitted each year what they seek, and nine-tenths of them will say "a business." Our sense of need must first be felt. That inspiration is the beginning of all knowledge, is as true as that God exists. We will find the bottom if we let go. If the descent is rapid, the return to light will be so too. We shall bemean ourselves if we seek for anything less than the highest and best. Some may ask what all this has to do with dentistry; some, too, accept these standards, and nothing less. The signs of the times indicate all that the purest desire can wish. The nations are crying out as much for prevention as for cure. As we are more fully educated in the principles, we more fully understand the preventive remedies. The dentist must be educated to be more than the so-called dentist; he must be a dental physician,—able to deal with all the conditions of both health and disease. Nothing short of a medical as well as dental education is the demand of the hour. That there will be differences among us is not to be wondered at; but it is possible that we be of one spirit,—"whereto we have attained, let us walk."

Of our journals, it is far from the truth to say that they are what they should be; yet we should be grateful that they are as much credit to the profession as they are. The periscopic method is on the increase with all the journals, with a decided advantage to the readers. All who have ability should feel it a pleasure to contribute to them, without fear of being rejected. The dentists who associate are readers; none can read the journals without profit.

Instruction by clinics has, during the year, showed marked increase. The associations have observed them at their gatherings with profit; the schools have given them increased attention; and, as a new feature, public clinics are held by the First District Dental Society of New York, under the direction of a committee, in the rooms of S. S. White's Dental Depot, each Wednesday. A record of all operations is kept and reported to the society. The attendance of a large number of dentists from all parts of this and other countries has been secured. The Brooklyn Dental Infirmary has been established by the Brooklyn Society, and is believed to be the first and only one of the kind. Clinics are also held here each week. It has grown to its present proportions at no little sacrifice of time and money, but those who have participated have reaped a rich harvest. The best method of reaching the public

has yet to be determined. Some individuals have made efforts,—with how much encouragement is yet to be made known. Let us impart in a true spirit of liberality, and let our communications be yea, yea, while in the light, and nay, nay, when darkness presents itself. So do, and future generations will rise up and call us blessed.

The following Special Committee on Dental Education was appointed: Dr. S. B. Palmer, Syracuse, N.Y.; Prof. Homer Judd, St. Louis, Mo.; Dr. M. S. Dean, Chicago, Ill.

A further report by the newly-appointed committee was then read by Dr. Francis.

The report claimed to be only a few simple suggestions. It is essential that all who practice a profession so indispensable to the requirements of the age,—when health, comfort, and even life depend upon the judgment and skill of its members,—should be thoroughly fitted for their mission. With the abundant opportunities, it is time that the day of empiricism had passed. Educational institutions are conveniently located; text-books are accessible to all; periodicals come each month well freighted with thoughts and suggestions; organized dental societies in nearly every State and city afford opportunity for interchange of thought and comparison of investigation; and in view of all this it would seem that there is little excuse for plodding in darkness, unaided by science. No profession has made such strides as ours; yet, as compared with other professions, we are far in the background. This should not be the case; and the future will testify that it will not be the case. Among the twelve thousand or fourteen thousand dentists of this country, are hundreds, yes thousands, who have had little or no preliminary instruction. Probably not one-quarter of this number read the journals, and are familiar with text-books. We know that in families or communities where newspapers and books are ignored we find ignorance and superstition. On the same principle, are not those of our profession who discard books and their teachings in the slough of ignorance?

The number of members of societies cannot be ascertained, but it is vaguely estimated that only about one-tenth of those calling themselves dentists are members of any dental organization; and of this small number scarcely one in three take a genuine interest in their societies, such as preparing essays and participating in discussions.

We have nine dental colleges in the United States in a healthy condition. We regret that their sphere cannot be more widely extended. We would make it a legal requirement for all new-comers to receive the benefit of their teachings. While charlatans and empirics drag at our skirts, so long must we expect to share in the odium that falls upon their heads. We hope the time is not distant when every State will require every practitioner to give evidence of his ability and fitness, as

to principles and skill. A law of this character need not be unjust. If a board of censors should be required to pass upon every applicant, what a change would soon be effected! Men in active practice, if allowed three or five years to fit themselves to pass the required examination, would not only in the end be themselves benefited, but their patients would be doubly benefited. Even in a mercenary view of the matter, the more valuable will be the dentist's services to his patient, and the greater the remuneration received for the higher skill employed.

Respecting students, the Committee suggest that while the value of private instruction is recognized, the importance of more extended scientific knowledge of underlying principles than is thus obtained cannot be overlooked, and they recommend that the profession generally impress upon their students the importance of pursuing a college course. In addition, they would suggest that the colleges as well as private instructors, decline to receive students whose moral character is tainted with vice, or who does not possess a fair academic education. Then, properly equipped and fitted for their duties, the student may move forward in the path of usefulness and honor, receiving the reward for his toil.

Prof. McQuillen said that his conceptions of what a dentist should be are of an exalted character. He should be a gentleman. If not one by nature, then these characteristics should be cultivated. He should be an educated man, as his calling brings him constantly in contact with persons of education and refinement. He thought a collegiate education should be made compulsory upon all who propose to enter the profession, and all men would be able to get it if they had the will. The advantages of a compulsory education were exemplified in Europe during the late war, in the grand movements of Bismarck and Von Moltke. It is all nonsense for a man to say he cannot get a collegiate education, who has hands, head, and health.

Dr. Atkinson. Medicine owes nearly every item of its truth to efforts of ignorant minds empirically put forth. I have been engaged in teaching twenty-five years, but have scarcely satisfied an ambition of my soul. I would go further in this matter than any who have spoken. I would have a man a graduate of schools before he can matriculate in dental knowledge. Fault-finding passes for criticism. Education is a serial cataloguing of mental concepts. "Dirt is only matter out of place." Let us speak forth our inmost convictions with truth and soberness on all occasions.

Dr. Walker indorses all that has been expressed by Drs. Atkinson and Francis. Charlatanism is not confined to those who are not graduates. We must have legal enactments to control this matter.

Dr. Crouse likes the idea of legislation, but if we pass such stringent

laws, what are we going to do for office-boys? The ignoramuses are crowded into the profession in this way. The meanest men we have are graduates. Get the right kind of timber before you build your house. Competition among colleges leads to too slight discrimination as to the qualifications of graduates. Colleges may be benefited by criticism. Men of the right kind of timber will work their way without means. There are too many colleges and journals,—spreading things too much, and inducing too much competition. Adjourned.

Fourth Day—Afternoon Session.

Called to order by the President. Minutes read.

The Chair announced as the Publication Committee Drs. Cushing and Forbes.

The report from the special committee on the Barnum testimonial was called for, and Dr. Cushing presented the medal, which he said was the report, and would speak for itself, and so far as its artistic merits were concerned, would bear close examination. The medal was accepted, and placed in the hands of Dr. Cushing for delivery to Dr. Barnum.*

Dr. Goddard moved to reconsider the vote by which the amendment offered by him last year relative to time of meeting was rejected. After discussion, the motion to reconsider was carried.

The original motion was verbally amended, the amendment carried, and the resolution as amended then put to vote and lost.

A resolution of thanks was passed to Drs. Allport, Cushing, and McKellops, for procuring and presenting to this association the beautiful medal to be presented to Dr. Barnum, as a testimonial for the free gift of the rubber dam.

The report of the Publication Committee was then read by Dr. Dean.

The report stated that the committee had, in accordance with their instructions, employed the publishers of the *Dental Register* (they making the most favorable offer) to issue three hundred copies of the

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* This medal was a most magnificent one, weighing 75 dwts., of full 18-carat gold, and was manufactured by Giles Bros., of Chicago. Upon one side was a most exquisitely engraved monogram of the letters "A. D. A." and the words, "American Dental Association, organized Aug. 3d, 1859." Upon the reverse was an equally elegant engraving of the monogram, "S. C. B." and the words, "Presented by the American Dental Association to Dr. S. C. Barnum in appreciation of the great value of his invention of the Rubber Dam, and of the true professional spirit in which it was given to the world, A.D. 1870." The engraving would bear the closest inspection with a magnifying-glass. The medal was donated to the society by Drs. Cushing, Allport, and McKellops, and was procured by them at a cost of $200.—Reporter.

Transactions, in paper covers, which with the less number printed, and the mode of publication, effected a saving to the association. But the committee, without reflecting on the publishers, did not recommend the future adoption of this plan, as the small saving was not commensurate with the disadvantages. The supervision of the work requires an attention quite impossible when it is done at a different place from the residence of the committee. The practice formerly adopted of transmitting the reports of each speaker to him for revision, resulted in its return so altered as to be scarcely recognized. This renders the Transactions more complete and scholarly, but tends to encourage a reckless style of debate. The committee have hit upon a compromise between this plan and that of publishing as reported. The reporter will, during the session, read over his notes to each speaker, giving an opportunity to correct errors while the subject is fresh: thus accuracy may be secured. The able stenographic reporter who was employed last year was secured for the present session. The charts accompanying the report on Dental Pathology were engraved at the expense of the chairman of that committee. The accounts of the committee show an amount paid for printing Transactions, of $204; reporting, $80; sundries, $17; and a balance due to the committee of $4.07.

The Publication Committee were, on motion of Dr. Judd, instructed to exercise their constitutional right of revision, in reference to the essays and discussions, excluding such matter as they deem unworthy of publication.

A motion to appoint a delegate to the Southern States Dental Association was adopted.

The committee appointed for the purpose, reported resolutions of condolence in relation to the death of Drs. Peebles and Willis.

Report of Committee on Dental Literature was read by Dr. Cushing.

The report considered it the duty of the committee to endeavor to advance the interests of the profession by fair and judicious criticism upon what had been written; and disclaimed any intention of personality in what might be said, all criticism being in the kindliest spirit, and should be accepted in the same spirit.

The periodical literature of the profession claims the first attention. We are always in advance of text-books, and must depend on the journals and transactions of societies for the most advanced knowledge: without them we should soon be behind the age. To say that our journals are all they should be, would be far from the truth; but considering how poorly they are sustained, and at how much personal sacrifice they are conducted, we wonder that they are as valuable as they are. A marked improvement is perceptible, however, during the past two years. It is unfortunate that they cannot exclude from their pages much that appears in them; if we ask why they cannot, the only

answer is,—first, that those who can write well do not; and second, that the meagreness of the support by subscriptions hampers the conductors, so that they cannot be as independent as they ought. As a remedy, let every man who is competent, make it a part of his religion to furnish two or more papers annually, requesting the editor to revise or exclude, if needful; and, next, let every man who takes but one journal subscribe for all the rest,—and if he takes none, subscribe for all at once. The editors cannot be held altogether blameless: they should more carefully revise what is sent them, suggest to authors such revisions as seem desirable, and thus improve not only the journals, but the future efforts of writers. The transactions of societies deserve mention. That of this body will compare favorably with those of former years. The Illinois State Dental Society has for three years published its Transactions, which we think will bear worthy mention. The committee commend this plan as one which, if pursued, would result in great benefit,—not only by preserving valuable matter, but by improving both writers and speakers, and in stimulating emulation.

Under the head of new works, but two are known to the committee,—the tenth edition of Harris's Principles and Practice, and a work on Pathology, in the German, by Prof. C. Wedl, of Vienna. The former has so lately appeared that the committee have been unable to thoroughly review it, or even to read the whole of it. They will notice only the most striking features, though it calls for an extended notice, being almost a new work. As we are informed in the preface, the great advances made in the departments of dental physiology, pathology, surgery, and mechanism, demanded a revision more complete than any preceding. The work opens with a well-written chapter on the cell doctrine, the theories of Dr. Beale being preferred, though an epitome of the most popular views on this subject is presented. In the arrangement and illustration of the anatomical portion a marked improvement appears,—the cuts appear to have been copied from Gray. In the chapter on tooth formation most of the recent theories are given, yet the investigations of Boll find no place. The chapter on the eruption of the teeth is omitted, for what reason your committee cannot conceive, since this would seem to be an essential part of a dental education. The chapter on "accretion of the jaws" seems to have also been excluded,—with questionable wisdom. In part second, considerable matter has been stricken out which could well be spared. An excellent chapter on diseases of the mucous membrane has been added, and that on tumors of the gums is much more full. This may be said, also, of that on alveolar abscess, though your committee were disappointed that its treatment was not more amplified. Brief reference is made, under the head of filling teeth, to heavy foil, and the manner of using it, —also to the use of the mallet. A very brief reference is also made to

the use of the rubber dam, but its merits are very imperfectly set forth, in the estimation of your committee, who regard this as the greatest invention ever offered to the profession, and deserving a more extended notice. Reference is made to the use of oxychloride of zinc in capping pulps, but the brevity of the instructions seemed greater than the importance of the subject justifies. While descriptions and cuts are given of the old-fashioned drill stocks for operating drills at different angles, no mention is made of the only really efficient and valuable instruments ever offered to the profession for this purpose, viz., Green's pneumatic engine, and Morrison's burring apparatus. The former has been in practical use for eighteen months, and the latter, though just in the market, was exhibited at the last meeting of this body. This oversight or neglect seems neither just nor excusable. With regard to the operation of restoring with gold, crowns of teeth, wholly or in part, the same views are presented as in the older editions,—that is, they are almost condemned. Granting that these views were correct at the time, the more advanced practice of the present day demands at least a modification of the opinions then held. Whatever the individual views of the editors might be, they should have given place to those theories and practices which so largely prevail in opposition to those held by the author, advocated as they are by very many of the leading men of the profession.

The department of mechanics your committee have been unable to give even a perusal; but they are led from a hasty glance to conclude that this branch has been very fully and satisfactorily revised. The only other portion to which we have given attention, is the chapter on defects of the palate. This we have read very carefully. There is much in the preliminary remarks which will prove valuable, and the descriptions of the appliances and manipulations are well written and instructive; yet as instructions which would enable students or even old practitioners to construct such an appliance, they are entirely valueless. We would hesitate to express these views had we not been confirmed by three gentlemen of intelligence, two of whom are fully familiar with the processes described. Your committee have endeavored to deal justly with the points they have touched at all, and have criticised only after careful reading and consideration. They regret to say that while in certain particulars the work is very much improved, yet it is gravely at fault as regards certain omissions; and as a text-book expressing the present advance of the profession, it will disappoint the hopes which the high standing of the revising editors have justified the profession in entertaining in regard to it.

The work on Pathology referred to, we can make but brief mention of; yet, through the courtesy of Dr. C. R. E. Koch, of Chicago, who has translated the chapter on the theory of caries, and who went over

the rest of the work with us, we are able to point out some of its principal features. It is apparently plainly written, the subjects naturally and fully treated, and the opinions expressed without arrogance. The specific gravity of different classes of teeth is given, and other features presented, which your committee deem rather peculiar to this work. In the chapter on the theory of caries, the author seems, in our opinion, to fairly settle the question of fungoid growths in this process; and to establish conclusively that they cannot be considered as one of the causes of caries. He claims that though the fungus certainly luxuriates in the dentinal canals, he has only found them where the dentine is partially decalcified, and never in the deeper layers. He considers that hereditary transmission gives the main reason for the frequency of caries. Your committee are led to believe that when the work shall have been properly translated it will prove of value.

The report then referred to the needs of the profession in this matter, claiming that we have no literature on this subject worthy the name, or of the present state of knowledge. The lack of knowledge of pathology and etiology is palpably great, and largely due to the absence of text-books, and a want of appreciation of its importance. The idea that the teeth are parts of a vital organism, has no force in the minds of a large part of the profession. There has been no satisfactory solution of the daily problems presented in the mouths of patients; the accepted theories will fail to satisfy studious inquiry, and the conclusion is daily forced upon us that we have to deal with diseases governed by the same laws as those which preside over the whole body. The work needed should not only consider underlying principles, but their method of application. Very few in any profession have the ability to make proper application of general principles; those who can do so stand out in bold relief from the mass. The work should be comprehensive, clear, and concise, and apt in illustration. The work of Prof. Tyndall on Heat and Sound affords the best example of the required style; treating subjects hitherto imperfectly understood in such a manner that any ordinary mind can comprehend them.

The report then enlarged upon the fact that the etiology of dental caries, whether we accept the vital, the chemical, or the chemico-vital theory, is but very imperfectly understood; no one nor all these will explain the causes. Predisposing causes are not a satisfactory explanation,—there is something beyond. Teeth are daily witnessed that by this theory should be particularly subject to decay, but yet are retained in a comparatively sound condition, while those on the contrary quite the reverse, are sometimes almost hopelessly destroyed. These phenomena force upon us the conviction that dental caries is not simply a local disease, but a local expression of a constitutional disorder. Chemical action is the immediate cause, but this is only rendered pos-

sible by the constitutional derangement. If this be true, then constitutional disease must be the cause, and it should be amenable to constitutional treatment; and the time is coming when it will be demanded, as much as operative treatment is now. This leads us to affirm that the dental practitioner should be educated to the fullest extent in general medicine if he hopes to develop the highest beneficence, and this will at no distant day be demanded by the public.

The magnitude of the proposed work was then noticed; it must be the result of immense labor, experiment, and research, attended with peculiar difficulties. To such a work must be brought a mind well stored with knowledge of the principles and practice of medicine, and trained in observation and investigation, with almost infinite patience and diligence; and a power to cast aside all preconceived opinions. Your committee have apparently wandered, only to present some grounds for the position they assume in offering suggestions touching the literature of the future. The demand for such text-books, as are here referred to, they feel to be the great demand which now presses upon us, and which sooner or later must be satisfied. Your committee felt impelled by a sense of duty to say thus much, and though their views are feebly and imperfectly presented, they hope that their efforts may not prove entirely fruitless.

Dr. Francis thought every dentist who is competent to do so should write one or more articles a year for the dental journals. If articles were not accepted at first, the writers should not feel badly about it, but should try again.

Drs. Cook and Morrison were appointed a committee to conduct the newly-elected officers to their seats.

Dr. Cushing, on taking the chair, thanked the association for the evidence of good feeling and confidence manifested in placing him in that position, and said that he would endeavor to preside with impartiality and satisfaction to the association.

Dr. Morgan, the retiring President, again thanked the association for the honor conferred upon him, and also for the courtesy extended to him during the past few days. He congratulated the body upon the harmony and good feeling that had prevailed, and upon the general character of the discussions. The papers read would do honor to any scientific body. The contrast between the present meeting and those a few years back deeply impresses him. He would also congratulate the body upon their newly-elected officers. This association has exerted a powerful influence for good; local societies have sprung up; a more liberal spirit has been inaugurated. This society has a controlling influence on the literature of the profession in this and other countries. The future is bright. The next twenty years will accomplish much more. He is glad to see the gray heads present; it inspires him with high hopes for the future.

A resolution of thanks to the retiring and re-elected officers, for the successful discharge of their duties, was adopted.

Also, a resolution of thanks to the reporters present, and to the railroads for favors extended, was passed.

The Committee on Prize Essays had no report.

The minutes of the day's session were then read and approved.

A motion was carried instructing those holding any number of copies of Transactions to forward them at once to the Treasurer, as he frequently had calls which he was unable to supply.

A committee of ten was appointed to secure half-fare rates to the next meeting, to consist of the officers of the society.

Adjourned to meet first Tuesday in August, 1872, at Niagara Falls.

C. STODDARD SMITH, D.D.S., *Reporter.*

NEW JERSEY STATE DENTAL SOCIETY.

THE second annual session of the New Jersey State Dental Society was held in Newark, and was called to order by the President.

Upon the favorable report of the Executive Committee, seventeen names were added to the roll of the society. Dr. Stockton addressed the meeting on the elements of character necessary to secure success.

Dr. Edward Maynard, of Elizabeth; Dr. C. P. Fitch, of New York; and Dr. S. E. Arms were elected honorary members.

The election of officers resulted as follows:

President.—A. W. Kingsley, of Elizabeth.

Vice-President.—G. F. J. Colburn, of Newark.

Treasurer.—Lewis Reading, of Trenton.

Secretary.—E. F. Hanks, of Rahway.

Executive Committee.—Thomas S. Stevens, Trenton; William Dibble, Elizabeth; J. C. Robbins, Jersey City; C. S. Stockton, Mt. Holly; Leo H. De Lange, Bordentown.

The following resolution was adopted:

Resolved, That a committee of three be appointed to take into consideration the regulation of the practice of dentistry in the State of New Jersey, and, if practicable, have a law passed that none hereafter shall be allowed to commence the practice of dentistry unless they shall have passed satisfactory examination before a board appointed in accordance with this act. Graduates of dental colleges excepted.

Drs. Stockton, Reading, and Colburn were appointed the committee.

Dr. G. F. J. Colburn, of Newark, was selected to deliver the next annual address.

Dr. Kingsley condemned Weston's metal in toto.

Straight's flexible edge met with no better success at the hands of Dr. Chew.

Dr. J. C. Robbins objects strongly to the odor of the celluloid base.

Dr. Hayhurst thinks the camphor in the plate would be liable to become dissolved in the mouth.

Drs. De Lange and Hanks gave a clinic, filling teeth with gold and using the rubber dam. Dr. De Lange demonstrated his method of capping the pulp, using oxychloride of zinc, finishing the rather difficult operation of filling the posterior approximal surface of an upper molar tooth without previous separation or preparation very creditably. Dr. Hanks inserted a simple crown filling in a lower molar, giving Dr. Morrison the desired opportunity of exhibiting his bur machine. It performed all the doctor claimed for it.

Dr. Colburn does not use the rubber dam, but does not condemn it; does not use it simply because he gets along perfectly well without it.

Dr. Stevens thinks it a valuable discovery; has used it since last society meeting with gratifying results.

Dr. Hanks cured a case of alveolar abscess that pointed at the chin by injecting the aromatic tincture of sulphuric acid. Is indebted to Dr. Atkinson for this mode of treatment.

Dr. Kingsley described a case in practice of abscess followed by necrosis and loss of the alveolar process of one side of the upper maxillary.

Dr. Colburn described Bacon's method of entrapping dentists who use the rubber without license.

The following resolution was adopted:

Resolved, That the New Jersey State Dental Society now in session in the city of Newark strongly protest against and denounce the practice of advertising cheap dentistry, now in vogue by those claiming to be dentists.

Only one unpleasant duty marred the harmony of the meeting—the reprimanding of one of the members for unprofessional conduct.

Adjourned to meet at Long Branch.

E. F. Hanks, *Secretary.*

EAST TENNESSEE DENTAL CONVENTION.

The fifth annual meeting of the East Tennessee Dental Convention convened at Knoxville, Tennessee, September 20th, President Dr. Cazier in the chair.

Dr. W. F. Fowler read an essay on "Mastication and Digestion;" Dr. Myers one on "Dental Education;" Dr. Cazier one on "Caries." The essays were freely discussed.

The "Proper Method of Cleansing Teeth," "Treating Exposed Pulps," "Filling Teeth," "Wedging," "Mechanical Dentistry," etc.

were also the subjects of debate. A clinic was held daily, several of the members operating.

Drs. J. Fouché, A. J. Dunn, and A. P. White were appointed a committee to present to the next legislature a bill, prepared by Dr. Cazier, to regulate the practice of dentistry in Tennessee.

The following resolutions, presented by Dr. J. Fouché, were adopted :

Resolved, That it is the desire of this association that two dental chairs be established in connection with the Nashville Medical College, one on Operative and the other on Mechanical Dentistry.

Resolved, That in our opinion Dr. Morgan, of Nashville, is the most suitable person to fill the chair of Operative Dentistry; that we will use our best efforts to procure a charter from the legislature for this purpose.

Drs. Fowler, Mayes, and Myers were appointed a Committee on Membership.

The following were elected officers for the ensuing year:

President.—Dr. Wm. H. Cooke, of Cleveland.

Vice-President.—Dr. A. J. Dunn, of Bristol.

Corresponding Secretary.—Dr. N. I. Mayes, of Sweetwater.

Recording Secretary.—Dr. A. P. White, of Knoxville.

A special meeting was appointed to be held at Bristol, Tennessee, on the third Wednesday of June next. The convention then adjourned.

During the session the highest degree of interest was manifested. A growing appreciation of conventions was evident. Several new members were added, and an advancement on the part of all, both in theory and practice, could be easily recognized. All left feeling amply rewarded for their attendance, and with a determination to do their utmost toward raising the profession in East Tennessee to a high standard.

N. I. Mayes, *Cor. Sec.*

BROOKLYN DENTAL SOCIETY.

The Brooklyn Dental Society held its regular annual meeting Monday evening, October 2d. The following gentlemen were elected officers for the ensuing year:

President.—Dr. A. H. Brockway.

Vice-President.—Dr. Wm. Jarvie, Jr.

Recording Secretary.—Dr. John C. Wyman.

Corresponding Secretary.—Dr. C. A. Marvin.

Treasurer.—Dr. J. C. Monroe.

Librarian.—Dr. O. E. Hill.

The attendance was large, and much interest was manifested.

The retiring President, Dr. Mills, and the President elect, made happy addresses.

Professor Taft, being invited to speak, urged increased earnestness on the part of each in seeking to advance the standard of professional education and thoroughness in all departments of our profession.

John C. Wyman, *Secretary.*

SUSQUEHANNA DENTAL ASSOCIATION.

The Susquehanna Dental Association will hold its fifteenth semi-annual session at Lewisburg, Pa., beginning Wednesday, November 15th, 1871, at ten o'clock A.M., to continue two days.

Essays are to be read by Drs. J. E. Valentine, B. F. Vallerchamp, and F. J. Richards. The subject for general debate is "Dental Caries."

Matters of vital importance will come before the association at this meeting, and members and the profession at large are hereby most earnestly invited to be present. J. D. Wingate, *President.*

J. M. Barrett, *Secretary.*

CLINICAL REPORTS.

UNIVERSITY OF PENNSYLVANIA.

Clinic of J. E. Garretson, M.D.

REPORTED BY DE FOREST WILLARD, M.D., PH.D.

Wounds.

Here is a boy who was playing with powder this morning, when an explosion occurred, driving some of the grains, together with pieces of glass and gravel, into his lips and cheeks. The parts are blackened, bloody, and dirty. Suppose he were in your office, what would you do? There is here, as in all wounds, a first indication. It is to cleanse the parts, and remove all foreign particles, as well as to check hemorrhage, if present. How would you do this? It is a little thing, but, gentlemen, little things give the surgeon success. I take a clean sponge and a basin of tepid water, and running the liquid over the parts, remove all that is loose,—then I throw in a jet with a syringe, which brings away much more extraneous matter; next, with a pair of forceps, I pick out the gravel-stones one by one, then the pieces of glass in the same manner, and again using the syringe, find that all is clean so far as the wound is concerned; but here are numerous grains of powder imbedded beneath the skin, which must be removed, since their presence would excite inflammation. Even should this not occur, their insolubility would render them incapable of absorption, and they would ever remain an unpleasant deformity. It will require some patience to take these all

away; but, with the point of this delicate double-edged tenotome, it can be readily done. The scorching and singeing are not severe, and will be readily cured.

Having secured such thorough removal of all foreign particles, our treatment is really half concluded; for there is now no hinderance to the rapid healing of all these wounds by Nature herself. We have but to apply a simple dressing of cold water, or of ext. opii ʒi, liq. plumb. subacet. dil. Oi, which will subdue the tendency to inflammation, and then keep the patient quiet; give a full dose of opium to-night, a seidlitz powder in the morning, and possibly order a little oxide of zinc ointment for the burns.

There are here no deep wounds which require sutures; and being lacerated, they present no smooth edges for approximation. Had the quantity of powder been larger, this glass might have been driven into the body with sufficient force to have severed even the facial artery and given rise to severe hemorrhage. When bleeding occurs in wounds of this region, we must first ascertain whether the hemorrhage be venous, capillary, or arterial. Should it be either of the former, simple cold water, or possibly alum-water, will be all that is required, especially if it be forcibly thrown upon the part from a syringe. Should this prove ineffectual, pressure may be resorted to, which is usually easy of application, since a bony floor is readily found. Compresses and a bandage can be obtained at all times, and your ingenuity must suggest the best mode of application. The "crossed" or "knotted circular" is often of great use. Should the blood proceed from an artery, much future trouble will be saved by a careful search for the bleeding vessel, even though it be necessary to enlarge the wound to secure it. Being once found, it can easily be closed with a ligature or by torsion, the latter plan often answering admirably. Acupressure is sometimes useful; but over these superficial facial bones, the compress and bandage will be the most frequently useful, being applied over the facial as it passes across the border of the inferior maxilla just in front of the masseter muscle. The inosculation is so great between the arteries of the two sides that it often becomes necessary to compress both main trunks, and sometimes even the frontal branch of the ophthalmic, and possibly the infra- or supra-orbital. Monsel's solution—the liq. ferri subsulph.—I do not like, and think it seldom necessary. It interferes decidedly with rapid repair.

When the oozing is capillary, and refrigerants or astringents do not readily control it, much benefit may be gained by the internal administration of tinct. erigeron Canadense, one drop, in water, every two or three minutes. This is one of the best remedies I have ever employed, excelling even opium and lead, although the latter are good if given in

doses of a grain of the former to one and a half of the latter every hour or two, according to circumstances.

Such would be the ordinary primary treatment of a simple wound; but suppose there was some special, specific, and poisonous cause, as the bite of a dog or snake, as frequently occurs upon the lips and cheeks, or what is even more common, the inoculation of chancre from a kiss. In the latter case you would of course treat it precisely as you would a similar sore upon the genitals; but if the wound be from either of the former causes, then immediate removal is the only safe and really effectual method to be pursued. This may be accomplished by a caustic, as acid nitrate of mercury; but far preferably, if possible, by the knife; cutting well into the healthy parts. The temporary pain and inconvenience to the patient will be vastly overbalanced by the mental comfort and assurance of safety in after-years. Suction by the mouth or by cups may be useful when other means are not at hand, and is always of benefit before the application of a caustic. There is no danger in applying the lips to any wound, provided they are not abraded.

The next question to be considered after the cleansing of a wound, is the one called healing. In my judgment, all wounds heal by granulation, the five methods given by some authors being only a difference in degree, not in kind. "First intention," "adhesive inflammation," "second intention," "third intention," "subcrustaceous cicatrization," are but varying forms of the normal cell-action. This action may be disturbed and arrested by the wound, but it soon recommences, and if vessel has been accurately adapted to vessel, union will occur so rapidly and with the production of so few granulations or so little inter-tissue, that no line of difference can be discovered even with the microscope, and we have "immediate union,"—"immediate," as Mr. Paget remarks, "at once in respect of the absence of any intermediate substance placed between the wounded surfaces, and in respect of the speed with which it is accomplished." A healing by "second intention" is but a continuation of the same process seen in the first, the only difference being that a few more granules are needed to fill up the gap, and thus we have new or cicatricial tissue—*tissue inodulaire*—in sufficient amount to be perceptible.

In illustration of these two forms, let me here show you examples. The first is a babe upon whom we operated for harelip a month since, employing our ordinary mode of angular paring and using the common harelip suture, adapting the parts most delicately and accurately. The result is, as you see, most gratifying; for I do not think that any of you at the distance of three feet would suspect that this lip had ever been incised. The red border is straight, the central prominence perfect, and the line of union only discoverable by close inspection.

The other patient is a boy who received a cut upon the lip while at play, which was allowed to heal without the aid of a surgeon. Look at the difference. Here is a broad, irregular, dense white scar which will be carried with him to the grave. Such a result is always unpleasant, but especially upon this prominent portion of the body; hence we should use great care in the accurate coaptation of parts, since this is the chief means of preventing excessive granulations. "Third intention," etc. are but continuations of this same process, the sole difference being in the amount of inter-tissue.

This brings me to the subject of *sutures*, as it is by their use that union is best assisted. Adhesive plaster or compresses may answer admirably where a wound is only slight, but deep or extensive incisions need a support which is immovable. The least possible scar will be obtained probably by the use of stitches or pins, augmented by adhesive strips, or by small compresses at the side of the wound, supported by a circular bandage. The best material for sutures is silver-wire, although iron is nearly as good, and even silk or hempen thread will not often prove irritating; still, all vegetable material is less cleanly, and tends to ulceration. Horse-hair is sometimes used. Metallic sutures may be retained in the body for a considerable period, and since the time of their introduction, by Simpson, they have been steadily growing in favor. That they were used long before his time is evident, however, from the fact that Fabricius ab Acquapendente recommends their use, and speaks of the irritating character of vegetable material. He used a continuous piece of metal for both needle and thread, —one end of the wire being sharpened for passage through the tissues. The twisted or figure-of-8 suture which you see me so often use, is of great service in wounds of the face. In the passage of the pins, great care should be taken to keep the margins of the wound exactly on the same level, while doubling in of the skin may be prevented by tilting up the edges of the wound during transfixion. The thread used for this suture should not be hard, since such material bruises the delicate parts beneath and leaves a scar. Narrow strips of lint would be even better.

The quilled and continuous suture are seldom used. Serre-fines, those little, serrated, spring-wire forceps, are sometimes employed to approximate wounds of the mucous membrane.

In regard to the time for removing sutures, no definite rule can be laid down. You must judge from the condition of the wound after cleansing. If it shows evidence of the incision, do not disturb them; but if there is simply a fleshy line, then you may carefully venture, even though it be not more than the second or third day,—usually longer, however. Use care in the removal of any suture, and do not rudely tear the tender granulations, but always give support with your

fingers. Always give either the pin or wire a rotatory movement as it is withdrawn by the forceps. A pin should be cleansed smooth from blood-rust before removal. The silk used will often adhere to the surface, from drying of the blood, and it is most commonly advisable to permit it to remain several days.

Adhesive strips should be removed slowly, and from both sides of the wound simultaneously. The covering of a well-adapted wound is not essential; still, a piece of lint saturated in carbolized oil, one part to the hundred, is often advisable.

At the second dressing, give good support to the parts by strips, but do not cleanse the wound too scrupulously; it should be touched, if at all, as gently as an embryo,—for such it is. In granulating wounds a sponge should never be applied. Running water is better; and the dressing, whether of oil or cerate, should be light. Stimulating dressings are only necessary when the surface granules are sluggish.

In conclusion, gentlemen, I have to show you this man, who states that he has a small pistol-ball imbedded in the side of his lower jaw, it having been in that position for two days. I cannot detect it through the wound, but I find that my probe is very nearly at the root of the first molar tooth, and as I cut down through the gum, I can easily feel a small, hard body, which I now lift away, and which you see is that which we seek. A foreign body should always be removed unless it is quite certain that the operation for removal will be of more injury than is likely to result at any time from the retention. These bodies do sometimes become encysted, but more frequently give rise to much inconvenience, and especially if sharp may be moved by gravity or by the pressure of surrounding parts until they occasion serious mischief. There is an interesting paper published in the Proceedings of the Med.-Chir. Soc., vol. i. p. 71, by Dr. Bence Jones, in relation to magnetic indications of the presence of iron bodies in the human tissues.

This wound before us shows decided signs of commencing erysipelas, but I think will not progress farther, now that the offending cause has been removed. For safety, however, we will brush the parts once or twice with a mixture, which I have always found to exert a most decided and happy influence over this dangerous disease, so common in connection with surgical injuries:

℞.—Tinct. Ferri Chlor. f℥ss;
Quiniæ Sulph. ℨss;
Tinct. Cinchon. f℥ij.
Sig. To be applied with brush.

[Patient directed to return for daily inspection.—De F. W.]

EDITORIAL.

AMERICAN ACADEMY OF DENTAL SCIENCE.

HAVING accepted an invitation, extended several months back, to deliver the annual address before this organization, I visited Boston with that object in view, and was so much impressed with the evidence of vitality and energy manifested by its members, that it has seemed to me a brief description of the character and aim of the Academy would be of interest to the readers of the DENTAL COSMOS. It was established in September, 1867, and is composed of active, corresponding, and honorary fellows,—the former consisting of resident practitioners of dentistry in the State of Massachusetts, and the two latter of reputable practitioners residing in other portions of the Union and foreign countries. An indispensable qualification for membership is the possession of the diploma of a respectable dental or medical college. On the roll of active membership is presented the names of some of the oldest and most eminent practitioners of dentistry in our country. Gentlemen whose rare skill, ability, and attainments were fully recognized by the community and the profession over forty years ago, take an active interest in its proceedings. The names of Drs. Daniel Harwood and Joshua Tucker are household words with the profession. Arrived at that period of life when men generally are a burden to themselves and others, these two worthy septuagenarians, in the full possession of their faculties, are still engaged in the daily practice of the profession. They feel a natural and commendable pride in the large number of students whom they taught many years ago, and whose elevated professional careers has reflected additional lustre upon them as instructors. Among these may be named Drs. Elisha G. Tucker, E. T. Wilson, J. H. Foster (New York), and W. W. Codman.

These venerable fathers of the profession, when taking students in their office, invariably demanded of them that they should obtain *a thorough collegiate education*, medical or dental, prior to entering upon practice. This cardinal principle is the foundation-stone on which the academy rests ; and in principle and practice has no more zealous advocates than Drs. S. L. Williams, E. N. Harris, and H. T. Bishop, who took part with those named above in its organization.

A clause such as this should be introduced into the constitution of every dental society. A collegiate education should no longer be a matter of choice, but obligatory upon the dental students.

The monthly meetings of the academy are well attended, and the practical questions of the day are thoroughly discussed.

There has been so much said in latter years of the exclusive fogyism and non-progressive spirit manifested by the older members of the pro-

fession, that it is but simple justice to pay this tribute of respect to an organization that originated with and is mainly composed of those who entered upon practice over thirty or forty years ago.

A younger element, Profs. Geo. T. Moffat, L. D. Shepard, and others, reared under the same influence, have recently joined the academy, and with eager emulous hands will keep the ball of progress in motion.

Its aim is not to be a mere local organization, but to exercise an influence that shall be felt in every part of the country tending to the advancement and elevation of the profession. J. H. McQ.

THE CHICAGO FIRE.

Just as we were making up our forms we received a letter from Dr. W. B. Ingersoll, of Chicago, giving a graphic description of the terrible destruction of property by the great fire. We have only room for a brief extract or two.

Our brethren are entitled not only to our deepest sympathies, but, in addition, to all the aid that can be extended to them from the profession.

J. H. McQ.

"Chicago, Oct. 16, 1871.

"Editor Dental Cosmos,—Long before this reaches you the news of our most terrible conflagration will have been published perhaps in every civilized nation on the globe. But months or years would not suffice to enumerate the suffering, the blighted hopes, the ruin which it has occasioned. * * * * * *

"Never before in the history of dental practice have so large a number of the dental profession been compelled to witness the total destruction of their small accumulations, which had cost each one of them years of hard labor and study. And they, not alone in their suffering, must walk forth to find their city in ashes; and with faces blackened by smoke, and eyes filled with dust and cinders, to look upon the ruins of their former homes and places of business.

"The following dentists are among the sufferers: Drs. Dean, Cushing, Swain, Crouse, Allport, Nichols, Koch, Thompson on Clark St., and Thompson on Washington St., Carpenter on Washington, and Carpenter on Monroe St., Farnum, Newman, Bell, Lewis, Baker, Ellis, Young, Enos, Board, Sherwood, Snyder, Swasey, Albaugh, Towner & Co., Harris & Cleveland, Bush, Adams, Thayer, Kilbourne, Chess, Noble, Stoddard, Low, Smith, Dryer, Noyes, and many others,—about sixty in all. The dental depots are all gone."

ERRATUM.

In the September number, under the head of "Genesis of Cells," page 570, germination should be *gemmation*. J. H. McQ.

BIBLIOGRAPHICAL.

TREATMENT AND PREVENTION OF DECAY OF THE TEETH: A Practical and Popular Treatise. With 38 Original Illustrations. By ROBERT ARTHUR, M.D., D.D.S., etc. pp. 260. J. B. Lippincott & Co.: Philadelphia, 1871.

It may, we think, be fairly assumed that this volume is entitled to, and should receive, the attention of every thoughtful and progressive dentist. No one who is ambitious to avail himself of every opportunity of perfecting his theory and practice can afford to ignore, without investigation, the mature and clearly-stated conclusions of one who occupies such a position as does the author of this treatise. The book is deserving of consideration, not only because the author brings to the discussion of the subject treated an experience of thirty years' practice, and an earnestness born of thorough conviction, but also because, as writer and teacher, he has established an influence which is beyond dispute, and made suggestions the general adoption of which has modified the practice of dentistry in no inconsiderable degree. The suggestions contained in the volume before us the author, however, regards as by far the most important he has ever made to the profession.

We do not by any means claim that, for the reasons assigned, the views and practice of the author should be adopted, but that they, therefore, demand careful examination. The difference between the methods in general favor and those which the author commends are radical, and if adopted will revolutionize the treatment of proximal surfaces of the teeth.

If his views are correct, and the system he proposes be really all that he claims for it, they must and will sooner or later so commend themselves to the public as well as to the profession as to become standard practice. If his system be founded in error, a practice based on it cannot but be hurtful, and the fallacy of his arguments should, therefore, be promptly exposed.

From the advanced sheets furnished us by the publishers, we propose to furnish a brief abstract of the work, leaving *criticism* to more competent hands.

In the preface the author claims as an inevitable conclusion that the methods at present relied upon for the prevention or arrest of decay of the teeth are either inadequate or imperfectly employed. He bases this conclusion upon the fact that the teeth of many persons are destroyed by decay, notwithstanding their anxiety to preserve them, and in spite of their resort to the dentist; that, assuming the great object of dental surgery to be the preservation of the natural teeth, it falls far short in this respect of what it might reasonably be expected to accomplish.

Dr. Arthur proposes to show that these wholesale losses of the teeth

are not a necessity; that, by his system, all the teeth of every individual, with rare exceptions, may be preserved; that decay of the teeth may be prevented; that the necessary operations are simple in character; that the pain usually attending dental operations may be entirely avoided, and that the cost of the preservation of the teeth may be greatly diminished.

The first chapter is devoted to a brief explanation of the structure of the teeth.

The second chapter deals with the causes and nature of decay. Dr. Arthur claims that the destructive action invariably commences externally, at some point or points upon each tooth affected; that this action does not always depend upon defective structure of the enamel, which, however perfectly formed, does not protect the teeth from caries; but that it is on surfaces in contact, and where the enamel is usually free from defect, that decay is more frequent than on the grinding surfaces.

In the third chapter the "treatment of decay" is considered. Plugging with gold or with any other material, it is contended, is not the only or the best method of arresting caries, though generally so considered, as shown by the fact that the best minds in the profession have been so largely occupied in devising improvements of materials, instruments, appliances, and methods in this direction. Arguing from the fact that close contact of the teeth leads to caries of the proximate surfaces, and that teeth standing separate from each other are not, as a general rule, attacked, the inference is drawn that a like exemption can be secured by artificial separation. A case is referred to and illustrated in which the incisor teeth of a lady had been filed—some of them to the extent of a full third of their substance—sixty-four years before a model of them was made, and yet remained perfectly sound, demonstrating the fallacy of the idea that the dentine inevitably decays if the enamel be removed.

This, then, is the method of treating caries, which the author proceeds to explain in detail. Taking up the case of a child at the critical period occupied by the shedding of the teeth and the eruption of the first permanent molars, he discusses and opposes the theory which proposes the extraction of the latter, and endeavors to show in the succeeding chapter that there are but a small number of cases in which these teeth may not be easily and advantageously preserved if timely attention is given to them. While admitting that there are cases in which it is best that they should be removed, he contends that their preservation is of great consequence,—their removal frequently leading to very serious evils. Even when the extraction of the first molars is decided to be the proper course to be pursued, it frequently becomes necessary to preserve them until the time arrives, when the best results may be secured by their removal. As a preventive measure, Dr. A. advises the cutting away of portions of the distal surfaces of the second temporary molars, so

as to isolate the mesial surfaces of the permanent molars. This will in most cases prevent decay at the points where it is most destructive and difficult to arrest. The filling of the defective places of the masticating surfaces is a simple matter.

The treatment of the incisor teeth is the topic of the fifth chapter. Caries of these teeth, it is claimed, rarely occurs except upon the surfaces in contact, and as the result of the retention of aliment or the buccal secretions. The incisor teeth the author believes might be generally preserved by great care on the part of the patient; but as the necessary attention would be rarely given, he considers it desirable to resort to other means of preserving them. He contends that if these teeth are carefully watched, so as to detect the first appearance of decay, it can be arrested more effectually by permanent separation than by filling, which latter method can only become a necessity as a consequence of neglect. The method to be pursued in these cases is fully explained and illustrated.

The sixth, seventh, and eighth chapters are devoted to the bicuspid and molar teeth. It is the application of the author's system to these teeth that will naturally excite the most opposition, and doubtless many in reading the volume will, up to this point, assent readily to the arguments advanced, but will find themselves startled by the proposition to separate sound molar and bicuspid teeth as a *preventive* of decay.

To this portion of the treatise Dr. A. seems to have devoted his most earnest attention, and makes a strenuous effort to convince the reader of the value of his system as applied to the teeth under consideration. Considering the relative liability of the different teeth to an attack of caries, he contends that in any given case this liability would seem to be about equal, they being, as a rule, of similar structure and exposed to like influences.

The following tables from Tomes and from his own records show, however, that the bicuspid and molar teeth are more subject to caries than the incisors and canines. Tomes states, in his "Dental Physiology and Surgery," that of 3000 teeth extracted there were

72 central incisors.	434 second bicuspids.
117 lateral incisors.	1124 first molars.
78 canines.	637 second molars.
273 first bicuspids.	265 third molars.

The author from his own records gives the following table of 1000 cases of caries:

		Per cent.
Central incisors	121	12·1
Lateral "	90	9.0
Canines	80	8·0
First bicuspids	172	17·2

		Per cent.
Second bicuspids	156	15·6
First molars	245	2·5
Second molars	113	11·3
Third molars	23	2·3

The experience of the author is, that as a rule the molar and bicuspid teeth will be attacked by caries if the proximate surfaces of the incisor teeth decay at an early age. He considers caries of the proximate surfaces of these teeth as *inevitable*, as a general rule, after the incisor teeth are attacked, the exceptions not exceeding five per cent. The author contends that if incipient caries of the incisor teeth can be effectually arrested by its simple removal, and the permanent separation of the affected surfaces, the same treatment is applicable to the bicuspid and molar teeth. The argument is supported by various reasons which we have not space to present.

The means necessary to detect incipient caries is next discussed. Visual inspection will not answer; reliance must be placed upon general indications; if these render it certain that caries has actually occurred in these teeth, the only hope of preserving them by the process explained is to cut them apart soon after they are erupted.

The efficiency of the operation of filling is in proportion to its early application; and now comes the question how best to reach the carious places so as to fill such cavities as may be found. The author examines the two methods of temporary separation by pressure, and permanent separation by cutting away portions of the affected surfaces, giving to the latter method the preference.

The question next argued is, that if slight caries can be arrested by a permanent separation of the teeth, why may it not be *prevented* from occurring by the same means? The methods pursued in the author's practice to effect this result are described in detail.

Dr. A. next considers the objections to his system, and answers them with clearness and force.

In the ninth chapter the author calls attention to the more serious consequences of dental caries,—exposure of the pulp, alveolar abscess, neuralgia, etc.

In the closing chapter the author endeavors to make some defense of the thorough and faithful practice of dentistry, which it must be admitted is greatly misunderstood by the public. The tendency to dental caries is increasing in this country, and it is a question with not a few of the best men in the profession, if this state of things continues, whether the operations now relied upon for the arrest of caries will prove adequate to the object in view. It certainly becomes all interested to carefully consider every suggestion which offers a hope of accomplishing, by any other measure, that which there is reason to fear will not succeed by the means now employed.

The following passage from the introduction to Koecker's "Dental Surgery," written at a time when dentistry scarcely occupied a position as a distinct profession, is worthy of notice in this connection:

"But as soon as the respectable professors of this art shall begin to communicate more freely to each other and to the world the fruits of their experience, it will be proved that this business is capable of systematic arrangement; and that it has two great and important objects in view, both of which it will then more easily and more certainly accomplish, namely: the cure of the diseases of the mouth and the prevention of the recurrence of them; and, secondly, so to operate by an early, suitable attention to the teeth, particularly those of children, as to prevent, in a great measure, the necessity of much curative treatment in the after part of life.

"The objects, therefore, are cure and prevention. For a time the curative remedies will be more in request, because of the extreme imperfection of the art, and from the great difficulty of eradicating from the mind of the public those erroneous prejudices which exist in favor of the old and long-adopted practice, and of making them sufficiently well acquainted with the superiority of any new methods. But in proportion as a sound practical knowledge is more generally diffused amongst the liberal and scientific professors of the art, and sought for by the public at large, in that proportion, it is to be hoped, will the preventive remedies become more generally and justly valued."

We cannot close this abstract without quoting a paragraph in reference to the duty of the dentist in the care of the teeth of his young patients:

"I have called the period occupied by the shedding of the teeth a critical one. . . . It is of the first importance therefore that the child should at this time be submitted to the professional care of a dentist. . . . He should, when he undertakes the requisite attention (which must begin as soon as the process of shedding commences), fix after every operation and examination the time when he considers it necessary to see the child under his care again, whether it be after the lapse of one day or one year. This must not be left to the recollection of any other person; he should send notice when the time for further examination or treatment has arrived. If the child is not sent as he desires, unless the failure to do so is to be attributed to unavoidable circumstances, he should relinquish the case, or make it plain that he will be in no way responsible for the result. . . . It is a very easy matter for a dentist to carry out a system of this kind, and the sooner he gets rid of people who will not respond to this effort for the good of their children the better. Their places will in good time be supplied by those for whom he will find it a pleasure to render service, the value of which is appreciated, and which he can make thoroughly effective."

J. W. W.

Odd Hours of a Physician. By John Darby. Philadelphia: J. B. Lippincott & Co., 1871.

We have here a volume of chatty essays on a variety of topics. In one mood the reader might call them philosophical treatises, while in a different frame of mind he would classify them as light reading. The author, in a happy, conversational style, so combines pleasant fancies

with his moralizing, that one is at a loss to know whether he has been most instructed or amused. A fresh and elevated tone of thought runs through the book, and much practical wisdom is sugar-coated with wit and pleasantry.

We commend it as a most acceptable volume for the table in the waiting-room of dentist or physician.

The fact generally admitted that Dr. J. E. Garretson has chosen, for reasons of his own, to mask his personality under the name of John Darby, will make the volume none the less interesting to the dental profession.

From the last chapter we quote that which, as the author says, if duly heeded, may prove to the reader that his outlay for the book has been the purchase-money of his life. J. W. W.

"One of the most common expressions heard, and heard everywhere, is, 'I have taken a cold.' Where one man has died in battle, a thousand have died from taking cold; and of every thousand dying, five hundred have come to their fate from not knowing what a cold is. As a physician, I am satisfied I do not overstate this.

"Now, what I propose here is, to tell the reader just exactly what a cold is, and the principle on which the doctor treats it. The whole gist of the matter is very simple—so much so, indeed, that you will likely be prompted to ask 'if that is all;' and yet all it will be.

"A Cold means a disturbance from exposure of the circulation; such exposure may have been either to cold, to heat, or to draughts. Flowing through the circulatory system of a man is that material which we call the blood. In a state of equipoise, or non-derangement, every part has alike of this fluid its proper proportion; there is just so much circulating through his lungs, just so much in his liver, so much in his spleen, so much in his feet; every part has enough, but not overmuch; he is comfortable, in health, in ease.

"Now we will make a cold.

"Four friends go out for a walk on a sloppy winter's day, and all come back with wet feet. Or the four, on a summer's afternoon, go out for a row on the lake or river; becoming overheated from exertion, each throws off his vest or neckcloth, luxuriating in the breeze which so rapidly and delightfully refreshes. Next day the four are sick; all have taken a cold. One, however, has Pneumonia, a second, Pleurisy; a third, Inflammation of the Bowels; and the fourth, Lumbago. In other words, all have the same thing, yet all have different diseases. This is their condition. The cold, impinging on the surface of their wet feet, or over their exposed chests and necks, so contracted the small vessels of those parts that all the blood was driven out of them; this fluid had, of course, to go somewhere, so it intruded on the circulation of other parts; it became, in reality, through its excess, an irritant; it overstimulated; it overcongested. In the case of the first patient, the lungs were his weakest organs; these had not the vital force to contract upon and drive back the current intruding on them, so the fluid forced itself into arteries and capillaries, and gorged them; this is Pneumonia. The other parts saved themselves alone through their superior vitality; they possessed the capability of resistance and antagonism. In the

second case the pleura was the weak part; in the third, the abdominal viscera; in the fourth, the muscles of the back.

"We have then our four patients, all laboring under congestions; all afflicted through a common derangement of their circulatory systems; the principle involved in all being precisely the same. If just here may be accomplished the restoration of the deranged equilibrium, the four will be well on the third morning; if such equipoise may not be secured, one out of the four will most likely succumb, a second be converted into a life-long invalid; the third and fourth may escape with more or less injury.

"What can be done? The indication is to relieve the overburdened part. How?

"We will take the lung as our example. The organ is full, overfull, of blood; the man is drowning from the engorging fluid; the vessels and capillaries of the part cannot contract upon themselves to their own emptying, because of this overfullness, which is the destruction of their tonicity; assist now to get away any part of this excess, and nature will take care of the balance. To get away part of this blood is then the object. This may be attempted in any way that promises to fulfill the indication. First, if the feet of a man be placed in a bucket of hot water, it is soon remarked that the parts grow red and engorged; this is because the capillaries are enlarged, and the blood, by gravitation and attraction, has filled every part. This blood must come from somewhere; it comes as much from the overfilled lung as any other part; the lung thus, perhaps, unburdened to the limit of its contractile power, the trouble is ended. A single hot foot-bath, or a repetition of these, has saved a multitude of lives; one might not count them.

"A second principle of relief to a congested part is to get into bed and drink hot tea until thrown into profuse perspiration. Now, as perspiration is the water of the blood, a man cannot sweat without casting off so much from the volume of the blood. In this way congestion is often speedily relieved.

"A third manner is found in reducing the volume through the use of what are called hydragogue cathartics. A dose of Epsom salts, for instance, may reduce the quantity of water in a man's blood to the extent of a quart, and this, in a congestion, might very well be his salvation. In conjunction with the depletory medicine the physician almost invariably prescribes opiates; this is with the object of soothing and quieting the irritated and worried nervous system.

"A man recognizes he has taken cold through a sense of feverishness and heat that takes possession of him. This is likely his very first symptom; it is the condition of a simple deranged circulation; at no particular point is there especial derangement, but the system at large is in a state of irritability. A quieting, soothing influence, any one may recognize, is just now the indication; it is really the case that the nervous centre, like an ill officer, has become fussy from some fright, ordering, if you please, the troops here and there without apparently any good reason. If the centre was less impressible, or a trifle more indifferent, nothing would be felt to be wrong,—indeed, nothing would be wrong. Anything which a man has recognized to be soothing to him is here in place; few things are better than lemonade made very acid, and if, in conjunction with this, the patient will take, on going to bed, twenty grains of the bromide of potassium, the chances are that next

morning he will get up well. If he does not, yet feels no worse, or it may be a little better, then he is simply to continue his lemonade and potassium through the day, at least two lemons to be consumed with the first, and fifteen to twenty grains of the latter dissolved in a wine-glass of water, three times repeated during the day. Under such a course it is much more than likely that the circulation will be found to calm itself as do the waters after a storm.

"We are, however, in our lesson, to look at the opposite aspect of the matter; perhaps the patient grows worse instead of better. A sense of fullness is felt in the head, or oppression in the chest. This is because a weak part is being overflooded,—the weak point, physically, of the individual. A man can always learn of such weak point through a cold. He has now the condition and indications found and described with the four Rowers. Now is the call for relief loud and pressing. It is the condition of a country overrun and overburdened with its own troops; these must be gotten away, all of them, and the quicker the better. Here, then, is the demand for the hot foot-bath, the sweating medicines, the diuretics, the cathartics, and, if the individual be of full habit and plethoric, it may be that it shall be necessary to destroy the troops in bulk by blood-letting. This last, however, is seldom necessary; proper generalship will save both country and troops.

"This, then, is a cold, and the principle given is that on which it is treated. To this extent has the reader learned of medicine and become indoctrinated in physianthropy."

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Practical Therapeutics, considered chiefly with reference to Articles of the Materia Medica. By Edward John Waring, M.D., F.L.S., etc. etc. Second American, from the third London Edition. Philadelphia: Lindsay & Blakiston, 1871.

This reprint of a popular English work affords a condensed summary of the medical properties of remedies, and the derangements of health to which they are applicable. To the busy practitioner such a work is valuable for reference in the exigencies of practice, and should, therefore, be in every professional library. Although useful in this direction, it is but a compend of practice—the record of clinical observation; and, though filling an important niche in the library, it is not entitled to the first rank in medical literature. It is not in any sense of the term a scientific treatise, and does not represent scientific therapeutics. The physiological action of remedies—the only true foundation of a scientific system of therapeutics—is almost ignored by the author. The real value of the book is, therefore, as a ready reference to the educated physician,—a storehouse from which he may obtain suggestions of practical value.

To the student such books are not only useless but positively injurious, as they tend to make him empirical in practice, if, indeed, they do not confuse him by a multitude of isolated, frequently contradictory, facts—so called; leading him to rely on the conclusions of others, instead of establishing him in principles which, once thoroughly appreciated, give him a foundation on which to rear a scientific practice.

Even in the class to which it belongs, Dr. Waring's work is not entitled to the highest rank,—limited as it is in great part to English medical literature,—American, French and German receiving a very small share of attention.

The paper, typography, and binding are in keeping with the standard character of the work. J. W. W.

THE TEETH, AND HOW TO SAVE THEM. By L. P. MEREDITH, M.D., D.D.S. Philadelphia: J. B. Lippincott & Co., 1871.

The desirableness of diffusing information among the people in regard to their teeth has been recognized by every intelligent practitioner. Many efforts have been made to meet this want, but nothing in the shape of book or journal has thus far met with much success.

It is high time that more attention were given to the subject by the people, for thereby a vast amount of suffering and the premature loss of these organs might be avoided.

The object of the volume before us is another attempt to interest the general public in a knowledge of their teeth,—their development, eruption, preservation, treatment when diseased, and replacement when lost.

The topics are arranged under thirty-five chapters, and include about all that the lay reader desires to know on the subject. The teaching in the main is that with which the majority of the profession coincide, though some radical views of amalgam will not find favor with those who use the article. The chapter on "The Causes of Decay," though, perhaps, sufficiently accurate for popular instruction, ignores the chemico-vital theory altogether, and recognizes but one essential direct cause—the action of acids. We think the author has erred in recommending for popular use such remedies as tincture of aconite root, acetate of morphia, etc., and in suggesting that a prescription in Latin (incorrectly written at that), and with pharmaceutical signs, should be copied and sent to an apothecary. On the whole, however, we find much more to praise than to condemn, and wish that a copy of the book were in the hands of every family in the land. J. W. W.

NORDISK KVARTALSSKRIFT FOR TANDLÆGEKONST. Redigeret af S. C. Bensow, Stockholm; J. Moller, D.D.S., Kjobenhaven: Juni, Juli, 1871.

The first and second numbers of the *Scandinavian Dental Journal*, edited by the above-named gentlemen, and published in Copenhagen, have been received. It is the first dental journal published in the Scandinavian language, and presents a very creditable appearance. Dr. Moller has promised to forward, from time to time, translations of articles from its pages which would be of interest to subscribers of this magazine, and keep them informed of the condition of dentistry in Denmark and Sweden. J. H. McQ.

SELECTIONS.

AN EXPERIMENT.

"Having at various times noted, in the dental periodicals, instances of replacement of luxated teeth with favorable results, I concluded to experiment in that direction, and having in my own mouth an ulcerated tooth, which proved to be one of those incurable cases sometimes met with; after enduring much pain and no little vexation, as a *dernier ressort* I concluded to have it extracted and replaced, more as an experiment than from any hope that it would be a success. Nature having failed to supply me with the superior right lateral incisor, the eye tooth occupied its place, and the first bicuspid the place of the latter, virtually making the bi. a front tooth—and hence a particular desire to retain it if possible.

"June 12th, 1871, I made a trip of twelve miles to my nearest professional brother (Dr. Garretson, of Knoxville), told him my wishes, and he soon relieved me of the troublesome tooth, and a deal of pain, which at the time was very severe. Tissues at apex of root much inflamed and nearly ready to suppurate; posterior proximal surface badly decayed, including half the crown; apex of root slightly bifurcated; nerve entirely dead and extirpated, and periostitis in the third stage well developed, giving the whole root a dark, unhealthy appearance; foramen of the palatine not much enlarged, perfectly black, perforating the root about three lines from the apex. It looked like folly to replace so hideous a looking thing, and the doctor said it was no use to attempt to save such a tooth, but I was determined to give it a trial; so, filling the nerve cavity with oxychloride and the crown cavity with amalgam, after scraping off the diseased periosteum and excising a couple of lines from the apex of each root, bathed in a moderately strong solution of carbolic acid, and had it inserted, it having been out perhaps ten minutes. Extracting and replacing both quite painful. Depend on occlusion of jaws to keep tooth in its proper position.

"The following notes of the case, written at the time, are taken from my case-book:

"First day—Tooth very sore, but blissful relief from all pain.

"Thirteenth—Tooth very sore when struck. Have to be very careful in eating and talking not to occlude jaws suddenly; uneasy sensation, but no pain except when struck; much inflamed externally.

"Fourteenth and fifteenth—Increased inflammation, with dull, heavy pain at times, especially when in a reclining position; relieved by holding copious draughts of cold water in my mouth.

"Sixteenth—Inflammation much abated; symptoms better in every respect.

"Seventeenth—External swelling subsided and tooth comfortable, though still a little sore and somewhat loose in the socket.

"July 1st—Tooth entirely well. Can masticate on it, but give it rest as much as possible, in order that it may become firm in socket, which it will, no doubt, in course of time.

"In conclusion, would say that, in these days of conservative dentistry, much might and ought to be accomplished in this direction, and, from the foregoing case, infer that many teeth, heretofore considered beyond redemption, might be retained and be made to do good service; yet we have little hope that we can persuade either operator or patient to adopt the plan, even as a last resort."—W. H. Barker, in *Missouri Dental Journal.*

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

Syphilitic Affections of the Mouth, Nose, and Pharynx; on the Local Treatment of. By Professor Sigmund (*Wiener Medizinische Wochenschrift*, *Schmidt's Jahrbücher*, and *Half-Yearly Abst.*).—"A main condition, as well for the prevention as for the treatment of syphilitic affections of the oral, nasal, and pharyngeal cavities, is a suitable and careful cleansing of these regions. By careful attention to this, according to Sigmund, these cavities escape altogether or become but slightly affected. The best general treatment of syphilis, he states, usually attains no good results when local attention to the affected parts is neglected; and with careful local treatment, on the other hand, a cure may be readily brought about. Syphilitic patients should be admonished to pay great attention to the cleanliness of the mouth, nose, and pharynx, even when these parts are not affected; should these cavities be subsequently involved in the disease, the patients are then accustomed to the application of the necessary measures and the treatment is much assisted. When these preliminary proceedings have not been practiced, patients after the appearance of the local affections are frequently unable to pay proper attention to the affected parts, in consequence of their increased sensibility and of the frequently considerable pain.

"The cleansing should be regularly practiced in the morning, after each meal, and in the evening. For this purpose the ordinary gargles, clean water, and even, when necessary, a simple tooth-powder, are to be recommended. Great care must be taken not to neglect these proceedings in the evening, because at this time, the body having been covered during the day by foreign and generally hurtful material of various kinds, requires a thorough cleansing. According to Sigmund, a complete evening cleansing of the body contributes very much to the purity of the air in the sleeping-chamber.

"For the cleansing of the nasal cavities the introduction of fluids generally suffices, so long as the fluid taken up can pass the back of the cavity to the pharynx, so as thence to flow away from the mouth. When one nasal passage is stopped up, or not readily passable, the patient must select the free passage first for the cleansing, and afterward endeavor to practice the same upon the obstructed side. If the patient should not be expert at this plan, the fluid should be injected, or the nasal douche used.

"For the cleansing of the pharynx, ordinary gargling is of no service, since by it, as a rule, the tonsils, epiglottis, upper part of pharynx, and back of tongue are not affected, especially when the tonsils are swollen or fissured; the chief part of the fluid, with ordinary gargling, is moved from side to side along the soft palate, and by chance only reaches the deeper parts. In order to gargle effectually, so as to cleanse and moisten the tonsils, the mucous membrane of the pharynx, the epiglottis, etc., the patient should take but a small quantity of the fluid, and carry it at once to the pharynx, as if he were about to swallow it down, and then, on this coming in contact with the epiglot-

tis, should, without any special movement of the soft palate, draw it back from the upper part of the gullet. In this proceeding some of the fluid often passes to the rima glottidis, the closing of which serves as an indication that the movement of swallowing has been rightly executed.

"If the mucous membrane of the mouth, pharynx, and nostrils be still unaffected, it will suffice to cleanse these regions three times in the day with some pure water. When, however, these parts present syphilitic phenomena, application of certain remedies should be made at certain times, and the patient must take care that the plan of treatment be properly carried out and as much as possible controlled.

"Syphilitic erythema and follicular exudation on the pharyngeal mucous membrane are not unfrequently regarded from their commencement as a simple catarrhal affection. Their obstinacy, their frequent exacerbations, without any satisfactory external cause, and the appearance of syphilitic phenomena at other parts, will often resolve all doubts. The same causes which particularly give rise to catarrh, often increase very considerably the inflammatory process of syphilis, and indeed this is very markedly the case with habitual catarrhs of the nose and pharynx. These affections are most frequently met with in scrofulous and tuberculous patients, hence the reason that these present in the nose and mouth the most frequent and most severe forms of syphilis. In cases of this kind, as pure and warm air as possible, cleansing with tepid water, and the use of slightly astringent fluids, are of service. For the nasal cavity should be ordered weak solutions, and for the mouth and pharynx solutions four or five times stronger, of suitable agents; of which alum, sulphate of zinc, and tannin are to be especially recommended; the last agent, as it cannot be well tolerated by many patients, may be suitably replaced by extract of rhatany, or preferably, by opium (Extract of rhatany, 3·75 grmm.; aqueous extract of opium, 1·25 grmm.; distilled water, 360 grmm.). If the surgeon is able to restrict his application to the affected spots, bichloride of mercury is the most certain astringent he can use. (0·06 grmm. to 180 grmm. of water for the mouth and pharynx, 0·06 grmm. to 360 grmm. of water for the nose.) The cleansing should be practiced with especial care in the evening, and, if necessary, even during the night.

"In affections depending upon erosions and ulcers, when the mucous and muco-purulent secretions possess a bad odor in consequence of fermentative, gangrenous, or putrefactive processes, the patient inspires air mixed with these products of putrefaction, and also swallows some of the foul material. In such cases Prof. Sigmund recommends solutions of the chlorate or permanganate of potash, or carbolic acid, which is to be preferred to the second agent on account of its cheapness. It is worthy of remark that tobacco-smoke, in spite of its containing supposed disinfecting products of combustion, not only does not hinder the progress of decomposition of the secretions, but actually favors it. If the patient cannot entirely give up smoking, precautionary measures must be taken to prevent bad results, and a fine sort of tobacco selected for use.

"In affections of lips, especially those at the commissures, Sigmund prefers to cauterization with lunar caustic, brushing the affected places with a solution of corrosive sublimate (0·18 grammes to 3·75 grammes of alcohol). This method not only fulfills all the advantages of the former agent, but impairs the elasticity of the skin to a much less ex-

tent than any other caustic. Immediately after the application of the caustic a very thin layer of cotton-wool, or a piece of soft filtering-paper, should, for a few minutes, be placed on the cauterized spot, and the lips kept at rest for some hours, for which reason the evening seems to be the most suitable time for practicing the cauterization. If the surgeon cannot apply the caustic himself, the patient may be instructed how to lay upon each sore a piece of soft blotting-paper of the proper size and form, which is dipped in the solution, and then wiped dry, and how afterward to cover the cauterized spot with cotton-wool or blotting-paper, as above described. A solution of corrosive sublimate in a mixture of collodion and castor oil previously used by Sigmund, though an especial useful application to the rectum, outer portion of vagina and urethra, has no marked advantage over the former application in the case of affected lips. Superficial excoriations and papules, and also granulating ulcers, may be dressed with gray-plaster (equal parts of mercurial and soap-plaster), spread upon very soft and flexible lint. This application favors the reparation of epithelium and cicatrization, as well as the restoration of the cutaneous elasticity. The so-called white salve (hydrochlorate of ammonia, 0·72 grammes; emollient ointment, 7·5 grammes), spread out upon soft lint, has an equally good result. The success attending all these plans of treatment depends very considerably upon the precision of the application.

"For affections of the gums, the application of the solution of corrosive sublimate, by means of a brush, is the most suitable plan, and, according to the results of experience, does not in the least injure the teeth. The stopping of decayed teeth, if this be not made of gold, may be loosened by this treatment, wherefore either contact must be avoided, or, if it be unavoidable, a concentrated solution of tannin should be substituted for the lotion of corrosive sublimate. It is especially necessary in affections of the gums to insist upon careful and frequently-repeated cleansing of the teeth and oral cavity, however painful it may seem to be, for upon attention to this point depends the preservation of the teeth.

"In affections of the tongue, the syphilitic nature of which it is often hard to diagnose, and which often cannot be distinguished, except with difficulty, from malignant growths, the surgeon should, in the first place, direct his attention to the state of the teeth, which very frequently give rise to or intensify the disease. Above all things, sharp edges and points should be filed away or covered by wax, caoutchouc, or some similar substance. The most suitable caustic agents are nitrate of silver and bichloride of mercury, used in the above-described forms. In order to protect the neighboring tissues, the surgeon should surround for a few minutes the cauterized spot with a wall of cotton-wool, and, in some instances, cover the tongue with thin layers of the same material. After the caustic has acted for some minutes, the mouth is to be washed out with a solution of chloride of sodium, after the use of nitrate of silver, and with sugar-water or milk after that of corrosive sublimate. In case of bleeding, perchloride of iron is to be applied. The other agents employed in solutions—as caustics on the tongue, as iodine, bromine, chloride of gold, chloride of zinc, etc.—are, according to Sigmund, far inferior to nitrate of silver and corrosive sublimate. With disease of the circumvallate and fungiform papillæ an especially careful cleansing is requisite before the cauterization, on account of the toughness of the mucus which usually adheres to these structures, and

on account of the difficulty which they cause of speaking and swallowing, it is requisite to apply the agents either in the evening or some time after the chief meal. In affections about the root of the tongue, examination of the diseased parts and application of lotions should be made with the help of a small mirror.

"The hard palate and the anterior portion of the soft palate are easily accessible both for examination and for local treatment; the posterior portions of the hard palate, however, with the uvula, the pillars of the fauces, the tonsils, and the back part of the nasal passages, require a close examination with a glass and special cleansing, particularly the anterior fold of the palatine arch proceeding to the back of the tongue and the tonsils. The tonsils and the walls of the pharynx are scarcely, if at all, touched by ordinary gargling, particularly when these parts are swollen and sensitive in consequence of disease. They ought, therefore, to be cleansed both from the nose and from the mouth by means of a tube. The syphilitic affections of the tonsils are difficult to diagnose, since even in relative good health considerable swelling, fissuring, partial loss, excoriations, follicular abscesses, and cicatrices may frequently affect these organs and yet remain unnoticed. The crypts of the tonsils sometimes form extensive fistulous passages, thus constituting a persistent cause of altered secretion and of increased sensibility. If the hypertrophied tonsils are not removed, the surgeon should at least slit up these fistulous canals or cauterize them to a sufficient depth. Of the ordinary caustics Prof. Sigmund prefers to nitrate of silver or bichloride of mercury the Vienna paste, immediately after the application of which the cauterized spot is to be washed with vinegar and water. Concentrated tincture of iodine may also be applied to ulcers with good results. Tannin is applied principally as a wash after the use of caustics, or as a retaining agent after brushing over the parts with tincture of iodine. All these applications, however, may be spared if the surgeon at once removes the hypertrophied tonsils, the most certain means of alleviating and cutting short the course of syphilis in these organs.

"A long-continued syphilitic affection in the soft palate, even when not very severe, may, according to Sigmund, cause reduced power of movement and reduced sensibility of this part. This diminution of mobility may, just as adhesion of the palate to the back of pharynx, render difficult a proper cleansing of the naso-pharyngeal cavity. In such cases, and especially when there is adhesion along a considerable extent, the use of the syringe or the nasal douche is indispensable. With inflammatory affections of the palatine and pharyngeal mucous membranes in syphilitic subjects, Sigmund recommends strongly the use of cold applications, and advises that tepid or warm lotions should not be used unless the patient feels that cold acts injuriously upon those organs, or until, during the use of cold applications, a period arrives at which alleviation of pain is no longer produced. Cold gargles and washes, cold drinks and ice, and cold external applications, according to Sigmund, alleviate considerably the pain and hasten recovery.

"Of great value in the treatment of syphilitic affections of the palate and pharynx is frequently-repeated dusting with alum, sulphate of zinc, and tannin. This should be done especially after dinner, and shortly before bedtime. For painful affections of the mouth, nose, and pharynx, Prof. Sigmund recommends as a very suitable anæsthetic, the inhala-

tion of a mixture of chloroform and sulphuric ether, to be used two or three times in the day periodically until slight narcosis is produced.

"Syphilitic affections of the nasal cavity at their commencement may easily escape observation and the patient's notice, since they give very little pain, and in their earliest stage at least can scarcely be distinguished from simple catarrhal diseases; yea, even considerable loss of substance may take place after the pathological changes producing the same have been unnoticed. It should also be considered that many parts of the nasal cavity cannot be observed except with difficulty, and, indeed, under some circumstances, are quite inaccessible. Here a careful cleansing is very necessary and useful, and for this purpose injection or the use of the nasal douche is to be recommended. It generally suffices for this purpose to use simple warm fluids, to which may be added when there is much sensibility opium or morphia. In cases where the secretion has a foul smell, solutions of chloride of potash, permanganate of potash, and phenic acid are very useful. In cases of simple catarrhal syphilitic erythema, and, perhaps, papules of the mucous membrane, the above-mentioned measures suffice, together with the injection of a solution of bichloride of mercury, applied twice in the day. In softening gummata a solution of iodide of potassium and tincture of iodine form suitable means both for cleansing and healing, to which, moreover, may be added, when practicable, the application of a caustic. All portions of destroyed tissue must be removed as rapidly and completely as possible; especially when the bones are affected, a condition which is commonly associated with a profuse discharge of a sanious secretion, is repeated and careful cleansing emphatically indicated. In cases of the formation of abscess and erysipelas prompt and thorough removal of pus is requisite, and with the latter affection, an energetic antiphlogistic treatment.

"Contraction and adhesions, in consequence of the cicatrization of the ulcers and shriveling contraction of the tissues, are not rare occurrences, and may frequently present an extremely high degree of severity. Prof. Sigmund mentions a case of a man in whom the passages of a depressed nose were almost entirely closed, and whose mouth was scarcely large enough to admit a body of the size of a hazel-nut; the proper tissue of the lips had been extensively destroyed, and the sunken funnel-shaped mouth was bound down to the scarcely movable jaws. Slight degrees of such adhesive changes are generally amenable to operative interferences, and loss of substance may be often repaired by plastic proceedings, although most frequently relieved by a compensatory apparatus.

"As with syphilitic affections of other parts, so with those of the nose, mouth, and pharynx, one cannot enforce too energetically well-regulated hygienic measures. In addition to the above-described proceedings as to cleanliness, care must be taken to supply the patient with good air and a suitable diet, since indeed by these the oral, nasal, and pharyngeal cavities are directly affected. Before all things, Prof. Sigmund warns against the use of tobacco, not on account of the local irritation only, but also because of the impregnation of the atmosphere with tobacco-smoke."

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"*Amyl Hydride—Synonyms: Pentyl Hydride—Pentylen*—$C_5H_{11}H$. —I bring you now to the hydride which, as far as we yet know, is of most importance to us in our practical work—amyl hydride. I believe

the day will come when amyl hydride will be as well known in the surgery and in the laboratory of the pharmacien as olive oil, ammonia, alcohol, or ether are now known; and I feel no small pleasure in being the first specially to recognize and point out its usefulness. For though it may seem a little, and perhaps a childish, thing to lift up to consideration a bottle of simple fluid like this, yet when a fluid as simple, even, as water itself is found to have everyday applications, it becomes a useful act to have picked it out from a host of other apparently more precious substances, and to have fitted it into its true place and service for mankind.

"Amyl hydride is the first of the organic hydrides of the group we are studying that comes to us in the liquid form. As a liquid it is beautifully clear, mobile, and transparent. It gives no oiliness to the touch, and it is absolutely innocuous when applied to the skin or mucous membrane. If I pour an ounce of it out into a beaker, and try to swallow it, it passes into vapor in my mouth with such vehemence that it boils and bubbles over furiously, but it does no harm whatever; and if a little of it be actually swallowed, it does no real harm—it distends the stomach, and acts like other gases that produce flatulency, but inflicts no injury on the mucous surface.

"The composition of the pure hydride of amyl is $C_5H_{11}H$; for brevity we may write it C_5H_{12}. It boils at a temperature of 30° C. (86 Fahr.). It has a specific gravity of 6·25 (the specific gravity of water being ·1000), and the density of its vapor, taking hydrogen as unity, is 36,—that is to say, it is thirty-six times heavier than hydrogen. When very pure it has a very faint odor,—so faint that some say it is positively inodorous; but there is a difference of opinion on this point, due obviously to a difference of the olfactory sense in different individuals. Hence I have met with those who say the substance gives a sickly and even unpleasant odor, like that of the lily. The vapor carries with it the perfumes and odors, mild or pungent, of other substances with singular efficiency. A mixture of ammonia and the hydride, made by passing vapor of ammonia through the hydride, is intolerably pugent—keener than ammonia itself. The sweet-smelling odors of the verbena and rose are carried by it most perfectly, and, to be brief, it might be made the basis of all scents and fragrant essences we use artificially.

"Amyl hydride may be derived from two sources: it may be made in the laboratory, and it may be found in a tolerably pure state in nature.

"It has been known for some years past that amyl hydride forms part of the oils known as American petroleum oils, and from these it has been separated, as the lightest of the class, by the process of fractional distillation. We have it sent to us in large quantities from this source, but not actually pure. It contains, as we receive it, some lighter hydrides condensed in it, and some heavier mixed with it. By careful distillation it may, however, be cleared of these; and I can send you round for inspection a specimen from our friend, Dr. Versman's laboratory, so pure that it serves all the purposes of our research. It answers, too, all the physical qualities that have been assigned to the hydride, and it is most pleasant to inhale. Soon after the introduction of ether spray a light petroleum was brought to me as a fluid that might take the place of absolute ether for the production of intense cold, by means of my spray apparatus. The fluid had been used thus, I learned, by Dr. Bigelow, of Boston, United States, and it was called rhigolene. I tried the fluid with the spray apparatus, and found, indeed, that it an-

swered well,—I may say, too well, for the freezing was instantaneous, limited, and evanescent. I heard, at the same time, that the vapor of the substance had been tried for the production of general anæsthesia by inhalation, but I was unable to obtain any details on this last-named subject. Sufficient, nevertheless, came before me to make me sure that the agent I had in my hands would prove of service. I found it was an impure but fair natural specimen of amyl hydride, having a specific gravity of ·649; and from it I started on the line of research that is now being narrated.

"PRACTICAL APPLICATIONS OF AMYL HYDRIDE.

"*Anæsthetic Ether for Local Anæsthesia.*—The first application studied had relation to the production of a new fluid compound for local anæsthesia by the spray process. The hydride having been found soluble, in all proportions, in rectified ether, various combinations of the two fluids were made, and the effects registered. In freezing with the spray, it is not the best practice to freeze too rapidly, for if the superficial parts be instantly frozen, the layer of frozen surface acts as a non-conductor, and deeper freezing is rendered impossible. At the same time, the practice is bad that delays the freezing process too long, since delay gives pain in the act of freezing, and pain during reaction. The point to find, therefore, was the correct medium or proportion between ether and the hydride for the end held in view. After many experiments, and many applications for operation on the human subject, I find that a mixture of one part of the hydride to four parts of ether is the most effective and ready fluid for spray. I call the mixture 'compound anæsthetic ether for local anæsthesia.' As a rule, this compound induces, in the form of spray, perfect insensibility of the skin in from ten to twenty seconds of time. It gives less pain than ether, when applied to a cut or open surface; and in operations upon the teeth, it is much better in action than the best ether used alone. It may be diffused into the mouth, as spray, with perfect safety, having no quality that needs to be dreaded. Once or twice during long operations on the mouth, and when the compound vapor given off from the spray was unavoidably inhaled freely, there was produced general insensibility, but this was rather favorable than otherwise to the operative procedure.

"*Solutions.*—I have said that the hydride of amyl is a solvent of many medicinal substances; and this fact has led me to use it in medicine, as a solvent, in various ways. I show you some of the compounds thus formed.

"*Iodized Hydride.*—Iodine dissolves readily in amyl hydride, and produces, in the proportion of twenty grains to the ounce, a solution of great service in practice. When this solution is applied to the skin, the volatile hydride passes off at once as vapor, and leaves the iodine, in considerable quantity, behind, stranded on the part in most equal form of distribution. This application is of singular utility in cases of hard, open sores, where it is desired to apply iodine evenly and deeply."

"*Chloral in Toothache.*—Dr. Page, in a letter to the *British Medical Journal*, states that for some time past he has employed chloral hydrate, not only as an internal sedative in dental neuralgia and caries, but also as a local application to a carious tooth. A few grains of the solid hydrate placed on a quill point introduced into the dental cavity speedily dissolves, and the pain is either deadened or effectively allayed.

A second or third application of the remedy may be necessary."—(*The Doctor.*)

Solution of Oils and Fats in Hydride of Amyl.—Dr. Benjamin W. Richardson says (*Med. Times and Gaz*): "Common oil mixes in the hydride of amyl freely, and stearine, spermaceti, and other similar fatty substances readily go into solution in it. When a solution thus made is exposed to the air, the volatile hydride evaporates, and leaves the oily or fatty matter behind. By this simple means we are able to leave upon the skin an even layer of substances which effectually exclude the air, and which, if required, may act also as means for diluting more active remedies. There is here in the hydride a solution of spermaceti and olive oil; the spermaceti, cut into fine shavings, is added until the fluid is saturated, then a sixth part of oil is added. This solution is most useful in the treatment of burns. It is gently poured over the burnt surface, and as the evaporation of the hydride proceeds, the cooling that occurs is an immediate source of relief from pain. In time the part is left covered with a pellicle or false skin of fatty substance, and the air is entirely excluded. If, when the surface of the body is freshly covered with the solution, a little cotton-wool is lightly placed upon it, the rapidity of evaporation is subdued, and the dressing is more effective. I met, myself, with the accident of a severe burn this winter, and treated the injured part precisely as I have stated, and with the best success. The relief from pain was all but instantaneous, and by reapplying the solution over the cotton-wool, I kept the pain entirely in abeyance until the balance of the circulation was restored. I left the dressing on the abraded surface, retaining it with a light bandage, and when, a few days afterwards, I removed the cotton-wool and the layer of fatty matter, I found the healing perfected. It is important in using this solution to avoid bringing the flame of a candle or other light near to the part, the vapor that goes off being very inflammable.

"The advantage of the hydride over ether and the other volatile solvents of fats is, that by its presence it excites no pain. The oxides and the chlorides themselves create local pain on sensitive surfaces; this fluid does not. In some forms of skin affection, where there are symptoms of extreme vascularity, heat, and irritation, the application of a mixture of the hydride and olive oil is very soothing and useful."

Salivary Fistula behind Parotid Gland.—At a late meeting of the Meigs and Mason Counties (Ohio) Acad. Med. (*Med. and Surg. Reporter*), "Dr. T. Curtis Smith reported a case of salivary fistula, in which the fistulous opening was situated behind the parotid gland, instead of its usual site in the cheek. He had succeeded, up to the present date, in checking the flow of saliva through the fistula, by applying with a fine probe wrapped with cotton and saturated with citrine ointment (ungt. hydr. nitr.), which had caused healthy granulations to spring up and fill the passage, and it had not discharged any saliva for two days. The fistula was of nearly eight years' standing, and resulted from an abscess involving the parotid gland."

"*Ulceration of the Palate—Faradisation—Recovery.* A. S. G. Jayakar, M.R.C.S.E., etc. etc., India.—M., a scrofulous-looking young man, aged about thirty, was admitted into Hutteesingh's Hospital,

Ahmedabad, on June 24, 1870, with a perforating ulcer of the soft palate. The hole was situated a quarter of an inch from the uvula, more to the right side, and was (on his admission) about the size of a threepenny-piece. The disease commenced a few months ago, in inflammation; an abscess subsequently followed, which, having burst, gave rise to ulceration and, lastly, to perforation. He denied having ever had syphilis, but admitted having suffered from suppurating buboes about five years ago; never had any symptoms of constitutional syphilis. His voice was mostly nasal, as might be expected under the circumstances. The patient having had a distinct appearance of one suffering from scrofulous diathesis, he was ordered to take cod-liver oil and iron, and, locally, astringent gargle.

"On July 20, the inflammatory signs about the ulcer having greatly subsided, faradisation was ordered to be applied to the walls of the perforation with a wire every other day. By September 5, the hole was reduced to one-fourth its original size, the walls showing a great tendency to contract. Glycerin of tannin was also occasionally applied, and it seemed to add to the efficacy of electricity. He left the hospital without permission on September 17, the hole being at the time reduced to a size much smaller than that of a pin's head, and his constitution greatly improved. A few more electric shocks, it was hoped, would have completed the cure.

"*Remarks.*—Was this ulceration scrofulous or syphilitic? From the evidence before us, we cannot but presume that the disease was of a scrofulous nature. The history of the case, the absence of any other symptoms of constitutional syphilis, the constitutional diathesis of the patient, and, lastly, the beneficial effects of the treatment adopted, all strongly tend to the belief that the case was one of scrofula, although it must be admitted that scrofula is rarely known to attack the palate alone. The beneficial effect of faradisation is a point of great interest in the above case."—(*Med. Times and Gaz.*)

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Necrosis of Lower Jaw. Under the care of Sir Wm. Fergusson, King's College Hospital.—"Jane P., aged twenty, admitted for necrosis of the lower jaw. She states that about twelve months ago, while loading a cart at a market-garden, she slipped and fell, striking the right side of her face, and cutting her cheek. A few days afterwards the jaw became very painful, and the cheek swelled considerably. The pain and swelling continued, and after nine months two openings formed, leaving sinuses, one of which is below and anterior to the angle of the inferior maxilla on the right side, and the other an inch and a half anterior to this. Through each dead bone could be felt. Sir William Fergusson enlarged the posterior sinus, and through it extracted a piece of necrosed bone about one inch and a half long, consisting of a portion of the angle and the bone anterior to it. The third molar tooth was dislodged with it. Oiled lint was applied to the wound, and the patient fed on spoon diet for a few days. The opening rapidly closed, and in ten days after the operation solid food was easily masticated."—(*Ibid.*)

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"*Necrosis of Inferior Maxillary Bone; Suberiosteal Resection of the whole of the Ascending and a good portion of the Horizontal Ramus; Recovery, with a Reproduction of Bone and Good Motion.* By Z. Sidney Scales, M.D., of Mobile, Alabama.—L. M., colored, aged

twenty-one, laborer, reports that in 1867 he had a congestive chill, was iaundiced, and was treated with large doses of calomel; since which time he has been troubled with bad teeth. During the fall of last year he consulted a dentist of this city (Dr. Shaw), who extracted the teeth from the diseased jaw, removed two small pieces of necrosed bone, and kindly referred the case to me for treatment.

"The patient was first seen by me in September, 1870, and, as yellow fever was at that time prevalent in this city in an epidemic form, I declined to operate, as it is prone to engraft itself upon surgical and other diseases, but put him on alterative treatment, with the promise to operate on the disappearance of the yellow fever poison. During the latter part of February, 1871, the patient again called on me, and on examination I found considerable enlargement of the cheek, with thickening of ascending ramus, and two sinuses in the superior carotid triangle freely discharging purulent matter, the sinuses communicating with each other. On passing the probe, it entered the bone about the angle of the jaw, and passed into the ascending ramus, coming in contact with dead bone. On the 25th February, assisted by Drs. Gilmore, Hall, and Sawyer, I cut down upon the diseased bone, peeled off the periosteum, and removed the whole of the ascending ramus, including condyle and coronoid, and a portion of the horizontal ramus, dividing the latter with a chain saw about one inch from the symphysis. Patient made a speedy recovery, the incision healing in almost its entire extent by first intention.

"Dr. Shaw, who saw the case about two weeks ago, reports that there is a reproduction of bone, with good motion."—(*Amer. Jour. Med. Sci.*)

Local Application of Sulphuric Acid in the Treatment of Carious and Necrosed Bone as a means of hastening Exfoliation.—Dr. John Rose writes (*The Lancet*): "I have lately used the above treatment in the Chesterfield Hospital, as recommended by Mr. Pollock, in two cases with success. One of the patients was a railway guard, whose leg was amputated below the knee. I need not enter into details; but after the operation there was slight sloughing of the stump, and some exposure of the tibia, to about the size of a florin, took place. I applied a lotion of equal parts of sulphuric acid and water, and in a few days a very gentle pull with the forceps brought the piece away, and the man is now recovering rapidly, with a good stump. The other was a wagoner, who was admitted with a very severe compound comminuted fracture of the tibia and fibula, and much contusion of the soft parts. Notwithstanding every care, exposure of the tibia took place in this case also, and I used the sulphuric-acid lotion for three weeks, when the bone came away in a similar manner.

"Conservative surgery has been again triumphant. Thanks to the carbolic-acid treatment in the first instance, and a good constitution; while latterly the sulphuric acid has done good service. There is nothing novel in this application of a strong mineral acid to dead or dying bone; but perhaps its useful effects are not sufficiently known or appreciated, and this is my reason for sending this note. I believe the application of the acid in the above cases, and the slight operative interference by the forceps, saved the surgeon and patients many weeks, and perhaps months, of weary waiting for the exfoliation to take place. Mr. Pollock, in a paper of great practical interest and value, says (*The*

Lancet, 1870, vol. i. p. 762): 'The antiseptic qualities of sulphuric acid are no small recommendation to its use. The foul and offensive discharge so constantly accompanying diseased bone become at once altered in character by it, and in a short time all disagreeable smell usually ceases.'"

"*Antisepticity in Surgery.*—At the annual meeting of the British Medical Association (*Lancet*), Mr. Lund, of Manchester, argued that antisepticity might be brought about by any means through which the excreta of wounds were protected from putrefactive change, and the surfaces on which they rest preserved from contact with the irritating chemical products thus elaborated. In recent wounds the strict observance of antisepticity saves much constitutional distress, tends to keep the tissues from loss of substance by sloughing and ulceration, and the patient's strength by needless suppuration. But in healing wounds it was admitted that greater time will be often required to complete a perfect cicatrix, although this, when formed, will be more pliable and natural than under other modes of treatment. The claims of many antiseptics were considered, but preference was given to carbolic acid in very weak solution, or in that form of composition which Professor Lister has described as his carbolized muslin, a modification of the antiseptic cerecloth first proposed by Mr. Lund at the meeting of the Association at Leeds in 1869."

Bromo-Chloralum.—Dr. L. P. Brockett, of N. Y., writes (*Jour. Mat. Med.*): "Observing the excellent qualities of the *chloralum*, and familiar with the antiseptic and disinfectant qualities of the salts of bromine, Messrs. Tilden & Co., of N. Y., added a bromide to it, forming a compound bromo-chloride of aluminum, or, as they have named it, *Bromo-Chloralum.* This preparation is entirely free from caustic properties, has no odor of its own, and effectually removes all offensive odors where it is sprinkled or cloths wet with it are hung up and the liquid evaporated; its vapor has no irritating property, even to the weakest lungs; it is a thorough and perfect disinfectant, destroying not by corrosion, but by its antiseptic quality, all fungi and germs of disease; it is applicable in a dilute state to ulcers, sores, gangrened wounds, and catarrhal or other inflammations of the mucous membranes and the air-passages; is an admirable gargle, and, if taken internally, has an alterative and stimulating effect. In cholera, its use in all the vessels before they are required, the application to clothes, dipped in a diluted preparation of it, around the bed and suspended in the room, will effectually remove the possibility of contagion. The floors, walls, carpets and furniture may be sprinkled with it, freely, without injury. These statements are not mere theories based on the abstract knowledge of the disinfecting power of bromine and chlorine, but the results of its subjection to the severest tests by men whose authority in all these matters is indisputable."

"*Treatment of Poisoning by Carbolic Acid.*—Mr. Charles Roberts, in a recent communication to the *British Medical Journal*, expresses the opinion that the administration of a mixture of olive oil and castor oil, which has been recommended in cases of poisoning by carbolic acid, with the object of diluting and carrying off the acid by the bowels, is of doubtful benefit, as it causes the acid to pass over the fat-absorbing

surfaces of the small intestines. He considers it probable that, as carbolic acid is little soluble in water, the speediest and most effectual way of removing it mechanically from the stomach would be to administer large quantities of warm water or mustard and water. As it is very soluble in glycerin, that substance, with water and sulphate of zinc, might be employed after the bulk of the poison has been removed by the former plan. As to the chemical neutralization of the acid, its affinity for albuminous compounds would point to eggs and finely-powdered raw meat as likely to be of service. If eggs were used, they should be very much diluted by being whipped up with milk or cold water. Milk is not coagulated by carbolic acid, and therefore would not act as a neutralizer, but it would be a more suitable application than oil to the injured mucous membrane."—(*Med. and Surg. Reporter.*)

"*Abortive Treatment of Felons.*—A correspondent of the *Boston Journal of Chemistry* writes that it is well known by physicians that pressure causes absorption; and in view of this fact, ten years ago he adopted the plan of applying several coatings of collodion over the finger or place where the pain is felt on its first appearance. On drying, the collodion contracts with an even pressure, and if kept on for twenty-four hours, the symptoms will usually entirely disappear.

"Of late he has been in the habit of soaking the affected part in quite a strong solution of carbolic acid for a few minutes before applying the collodion. The pain for some hours will be quite severe, but an anodyne will afford relief."—(*Med. Record.*)

"*How to collect Diatoms.*—The *American Journal of Microscopy* recommends, as the best plan of collecting diatoms in large quantities, to tie a thin, fine piece of linen over the faucet of the hydrant in the evening, and allow a small stream of water to pass through it all night. In the morning take off the cloth, and rinse it in a little water in a goblet. When ready to examine, take a drop of water from the bottom of the goblet with a small pipette, or glass rod, and place it on a flat slide, or a slide with a concave depression, holding a few drops. Then, with a power of 100 or 350, sweep the field, and you will be rewarded with a sight of a wondrous collection of beautiful and unique forms."—(*The Clinic* and *Boston Med. and Surg. Jour.*)

"*Gold Weight of Sunshine.*—Some years ago Professor John C. Draper published a description of an actinometer, in which the chemical power of the sun's rays was measured by the precipitation of gold. Draper's process is founded upon the fact that a solution of peroxalate of iron that has been exposed to sunlight throws down a precipitate of gold from the solution of chloride of gold, while the freshly-prepared peroxalate that has been made in the dark has no such action. The success of the operation depends on the freshness of the peroxalate, and the uniformity in the method of preparation and manner of exposing the solution to the action of the light. To insure the first and second of these conditions, the solution was prepared every evening by dissolving moist, pure peroxide of iron in a standard solution of oxalic acid, and raising the temperature to the boiling-point. The excess of peroxide of iron was then separated by filtration, and the solution placed in the tube in which it was to be exposed to the light on the day following. Uniformity of exposure was obtained by placing the tube

in a small box, blackened in the interior, and with an opening one inch square on one side. The opening was turned toward the polar star, and the contents of the tube thus exposed to a diffuse daylight under conditions that could be rigorously reproduced each day.

In the evening the contents of the tube were treated with a carefully-prepared pure solution of chloride of gold, and the precipitate collected on a filter, dried, ignited, and weighed, when the weight of precipitated gold indicated the amount of change the sunlight had produced in the solution of peroxalate of iron. To save time the solution of peroxalate to be used the day following was prepared in the intervals that occurred during the performance of the last-described operation."—(*Sci. Amer.*)

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"'*Chromatized Gelatine,' and some of its Uses.*—It has been recently discovered that gelatine, in the presence of a salt of chromium, is rendered insoluble by the chemical action of light. It was at first supposed that the gelatine in this case is partially oxidized, but experiments have shown that it combines with the chromic oxide to form a compound insoluble in water. It has already been utilized in the arts in several valuable inventions, and it will doubtless prove useful in other processes yet to be devised. The most important application of this 'chromatized gelatine' thus far is in what is called the 'heliotype process.' This is virtually a new art of lithography, which promises wholly to supersede the old method. This chromatized gelatine is also employed in a new process for rendering woven fabrics water-proof. Cotton and linen that have been soaked in a weak solution of gelatine or glue and bichromate of potash become water-proof on exposure to daylight, without becoming impervious to air. They can be made air-proof by using a solution thick enough to fill the interstices between the threads. It can also be used for uniting two or more layers of cloth, and at the same time making the double fabric water-proof. The layers are spread with the chromed gelatine solution, put together, and exposed to the light. Leather, paper, and wood may be united in the same way, and rendered impervious to water.

"Ordinary glue becomes insoluble in water upon adding a little bichromate of potash to the water with which it is mixed. If the preparation of the glue is conducted in daylight, no special exposure of the articles on which it is used will be necessary. This insoluble gelatine has been used for making billiard-balls, buttons, and a variety of useful and ornamental articles; and, as we have intimated, it is probable that its industrial applications will be rapidly multiplied. It is certainly a very striking illustration of the important practical results to which the discovery of a single chemical fact may lead."—(*Boston Journal of Chemistry.*)

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"*Nickel-Plating.*—Prof. F. Stolba communicates a plan for nickel-plating, by the action of zinc upon salts of nickel in the presence of chloride of zinc and the metal to be coated. By this process, the author informs us, he has succeeded in plating objects of wrought- and cast-iron, steel, copper, brass, zinc, and lead. It is only necessary that the size of the objects should permit them to be covered entirely by the plating liquid, and that their surfaces should be free from rust or grease. The following is the *modus operandi:* a quantity of concentrated chloride of zinc solution is placed in a cleaned metallic vessel, and to this is added an equal volume of water. This is heated to boiling, and

hydrochloric acid is added, drop by drop, until the precipitate which had formed on adding water has disappeared. A small quantity of zinc powder is now added, which produces a zinc coating on the metal as far as the liquid extends. Enough of the nickel salt (the chloride or sulphate answer equally well) is now introduced to color the liquid distinctly green; the objects to be plated are placed in it, together with some zinc clippings, and the liquid is brought to boiling. The nickel is very soon precipitated, and in course of fifteen minutes, if the work has been properly performed, the objects will be found completely coated. The coating will vary in lustre with the character of the metallic surface; where this is polished, the plating will be likewise lustrous, and *vice versa*. Varying the process by the addition of a salt of cobalt, instead of nickel, will afford a cobalt plating, which, the author informs us, is steel gray in color, less lustrous, and more liable to tarnish than the nickel."—(*Jour. Franklin Institute.*)

"*Very hard Cement.* Rev. F. Moigno.—Some repairs being required to the stone steps leading to a garden, the mason used Portland cement mixed with finely-divided cast- and wrought-iron filings and broken-up borings, instead of with sand. The result has been that the mass has become so hard as not to admit of being broken either with hammer or pickaxe."—(*Les Mondes* and *Chemical News.*)

"*Preventives for the Ignition of Woven Fabrics.*—A. Patera recommends the use of a solution consisting of—water, 20 parts; borax, 3, and sulphate of magnesia, $2\frac{1}{4}$ parts. These salts are only to be mixed just previous to use. The muslins and other similar fabrics are thoroughly impregnated with the solution, next wrung out, and are, after having become nearly dry, ironed. The use of a mixture of sulphate of ammonia and sulphate of lime is also recommended. And, lastly, attention is called again to the application first made by Fuchs, so far back as 1823, of a solution of silicate of potassa, or soda, for rendering wood, and especially theatrical decorations, fire-proof,—that is to say, preventing such from bursting into flame if accidentally ignited."—(*Ibid.*)

"*Iron Cement.*—Winkler has found that the best iron cement can be made by preparing a mixture composed of 16 parts of clean wrought-iron filings, 3 parts of pulverized sal ammoniac, and 2 parts of flowers of sulphur. This mixture can be kept in a dry package any length of time, unchanged; and when required for use, it is better to reduce one part of it with 12 parts of iron filings, and enough water, containing a little of sulphuric acid, to form a stiff paste. When thus reduced it must be immediately applied, as it sets rapidly. The author recommends it for joining broken pieces of cast-iron, and for stopping large fractures. For very fine work, pure pulverized iron filings, such as apothecaries use, can be substituted for the coarse article."—(*Sci. Amer.*)

"*Substitute for Alcohol for Blowpipe Lamps.*—I have tried several but have not found one efficient. In the use of alcohol, a large part of the burning surface is invisible while soldering, and thus a larger blaze is required to direct it. If a few drops of kerosene be added, the whole of the blaze is visible, thus enabling the operator to use less burning surface; for he can direct the whole amount to the purpose for

which it is needed, and at the same time economizing the burning of the alcohol."—(R. B. F., of N. Y., *Ibid.*)

Clay Heaters.—"Fuel for domestic purposes, it appears from one of our French exchanges, became so rare an article during the siege of Paris, that several ingenious devices were invented to meet the positive hardship suffered from its scarcity. One process that met with great favor was to saturate porous cylinders of clay prepared for the purpose, with bituminous substances. These were used like the charcoal, which is largely used under ordinary circumstances."—(*Jour. Frank. Inst.*)

"*A New Light.*—In the *Journal l'Eclairage au Gaz* is given a plan for a new system of illumination. The author, Dr. Harcourt, proposes to mix burning gas with a certain proportion of air, and to allow the mixture to impinge upon platinum-sponge. The result, it is claimed, is the production of a more brilliant light without increased expense."—(*Ibid.*)

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Headaches: Their Causes and their Cure. By Henry G. Wright, M.D., M.R.C.S.L., L.S.A., etc. From the Fourth London Edition. Philadelphia: Lindsay & Blakiston, 1871. This is a new edition of a well-known work which has been for some time out of print. The author has not considered it necessary to make many changes, but has endeavored to preserve its practical character and enhance its usefulness. It affords much valuable information on the origin and treatment of a class of distressing disorders, unfortunately too prevalent from defective knowledge and bad modes of living, as well as from causes not easily recognized or avoided. It will prove an efficient aid to practice.

The Physician's Prescription Book. Containing lists of the Terms, Phrases, Contractions, and Abbreviations used in Prescriptions; with Explanatory Notes; The Grammatical Construction of Prescriptions; Rules for the Pronunciation of Pharmaceutical Terms; A Prosodiacal Vocabulary of the Names of Drugs, etc.; and a Series of Abbreviated Prescriptions, illustrating the use of the preceding Terms; to which is added a Key, containing the Prescriptions in an unabbreviated form, with a literal translation for the use of Medical and Pharmaceutical Students. By Jonathan Pareira, M.D., F.R.S. Fifteenth Edition. Philadelphia: Lindsay & Blakiston, 1871. This is a new and revised edition of a standard manual, whose character and scope is well indicated by its title. The fact of its having reached the fifteenth edition is sufficient proof of its merit, without further commendation.

The paper, typography, and binding of these three books are excellent, and creditable to the publishers.

(CIRCULAR LETTER.)

To the Friends and Patrons of the Chicago House of Samuel S. White.

Our beautiful city is burned, and we write you from its smouldering ruins.

Our own pleasant business home, in which we have hitherto been glad to welcome so many of you, is involved in the common destruction, and every vestige of our business here consumed.

In this crisis we are asked, "Will you suspend business temporarily? Will you leave Chicago?" etc.; to which we reply, "*This is our home, and we will not desert it.*"

We have lived and labored thirteen years among a resolute people, who now propose to rebuild the city of their love and pride,—have partaken somewhat of their spirit, and propose to stay with them,—*stay in Chicago*,—and, with our smitten neighbors, trusting Divine Providence, and asking our friends to stand by us, *begin again.*

The writer has a store of pleasant associations with the dental profession in the West, some knowledge of their tastes and wants, and a genuine purpose to serve them with whatever ability he may have.

These the fire has not destroyed, and with the old force of genial and experienced assistants, we are again at your service.

Mr. White, though suffering severe loss in the great disaster, has promptly forwarded from Philadelphia fresh supplies of stock most in demand, and we are already filling many orders as usual. Those which we cannot attend to ourselves are sent at once to Philadelphia, and receive prompt attention there.

Our travelers will promptly fill every appointment, and we shall spare no effort to meet all your requirements.

We earnestly solicit and shall gratefully appreciate the early remittance of every outstanding balance.

Send New York exchange, postal orders, or currency by express.

Our office will be for a few days at No. 121 Eighteenth Street, east of State, but letters addressed as heretofore will reach us.

Mr. White will immediately erect a convenient structure for our business (which we hope to occupy at an early day), on *Madison Street, east of Wabash Avenue.*

Gratefully remembering all your past favors, and bespeaking your continued patronage, I am

Yours, respectfully,

S. R. BINGHAM, *Manager*,

FOR SAMUEL S. WHITE.

CHICAGO, October 14, 1871.

THE

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ORIGINAL COMMUNICATIONS.

THE GERMAN DENTAL MEETING THIS SUMMER.

BY E. A. BOGUE, M.D., D.D.S., NEW YORK.

It was my good fortune during this last summer to attend a part of the eleventh yearly meeting of the Central Society of German Dentists, held at Berlin, and that some idea may be obtained of the status of our profession in Germany, I propose to give a little sketch of what I saw and heard.

First, then, there were about one hundred members present, and when we bear in mind the scarcely-finished war with France, which drew so heavily upon the resources of the German nation, and upon each individual member of it as well, we might be surprised that so large a gathering took place, especially at such a city as Berlin, far from the geographical centre of the country, and the most expensive city in it; then, again, the meeting was held in the summer, just after the triumphal entry of the returning troops had taken place, and was among the things of the past, and with it had also passed away, for the season, emperor, court, and gayety, leaving only dullness, heat, and dust, and the necessary business, behind.

Here, therefore, from Austria, Bavaria, Baden, Hanover, Würtemberg, and nearly all the other German states and provinces, came the members, many of them from states lately at war with Prussia, and others from states whose rulers have been made subsidiary to this great central power.

They met in a hall in the "Norddeutschen" House, one of the numerous hotels of the city, and each person entering was provided with a ticket,—green for the members and red for guests, who must in all cases be either physicians or dentists.

A local programme was put into the hands of each member, indicating hotels of various classes, restaurants, and cellars where the beer was *good;* proper places of amusement for the evenings, when the members

being at leisure might otherwise get into mischief; the hours of meeting and the places of dining of the society, with the price of the dinners; and finally, the statement that the *Stranger's Guide to Berlin* could be had gratis at the committee-room. This latter paper contained the advertisements to all the *im*proper places of amusement that strangers generally want to see; so it will be observed that all classes were nicely cared for in the most impartial manner—and that, too, without a stain upon the local programme issued by the committee.

Alongside of the meeting were two other rooms, in one of which the widow of a deceased member was offering for sale a not bad assortment of dental goods, while in the other, keeping up a lively competition, the European traveler of our friend S. S. White was exhibiting the dental substitutes and appliances manufactured by him, explaining their uses and descanting upon their merits in true Yankee style—meanwhile showing samples of the new celluloid base—notwithstanding he was in staid old Germany, and obliged to do his talking in the vernacular.

The members present were a fine-looking set of men on the whole, many of them being noticeable as men of education and refinement, while very few showed those marked provincial traits that generally with us distinguish the membership of a convention from that of a delegate body.

The President, Dr. W. Süersen, of Berlin, is a gentleman of good natural abilities and education, and a fair address, and has received the title of "Hofrath," literally court counselor, but meaning pretty nearly consulting dentist to the court; so that if difficulties arise in the practice of the gentlemen called in to treat the court, Dr. Süersen is called in consultation as an expert. This gives him a certain position, which, to the vulgar mind, is quite an exalted one, and which, I am sorry to say, seems not to be always used in the highest interests. Among us no man of position or eminence would consent to underbid his neighbor for the paltry profit to be made from a set of teeth; neither would he persistently speak in a slighting manner of his colleagues, and in deprecation of their abilities; but in Berlin, at least, this thing has been done to such an extent that there is an open rupture between two parties, and only a small proportion of the *resident* dentists received an invitation to participate in the deliberations of the society; even the American dentists were omitted, together with the others who were not pleasing to the managers.

But differences of this kind are not pleasant to dwell upon nor creditable to a liberal profession, not to say to humanity; so, without further comment, we will proceed to the subjects that were presented to the society for discussion.

Before giving the printed list of subjects, I will mention one admirable feature in the management. A letter-box was placed conveniently, where any member could drop, *unseen*, any question that he wanted to

ask, no matter how simple it might be; and at stated periods these cards or slips of paper were taken by the President and read aloud and answered at once, if he knew what answer to give, or referred to the meeting for a little discussion, in case that seemed desirable. In this way many questions came up that no one would have liked to propound from the floor; indeed, they might have excited ridicule, as seeming, sometimes, to indicate ignorance, though, perhaps, the ignorance might not have been so great on other topics; many were benefited by the answers, and sometimes the discussions showed that what seemed but a simple question was, in fact, a question of the widest range, that no one really had an answer for. By the way, it might not be beneath the notice of the professors in our dental schools to adopt this plan, so that a modest, though inquiring, student might have an opportunity of being heard, and yet retain his incognito.

The programme of subjects for discussion was as follows:

1st. Treatment of alveolo-dental periostitis, after Magitot.

2d. Has the mallet in gold filling attained a more extended introduction among us, and what are the experiences in regard to it?

3d. What is the shortest and best manner of obtaining in winter or on cloudy days a gum color in red rubber?

4th. Is it possible that thymol (Stearopten des Thymian Oels) can replace creasote for all purposes in dentistry? What is its operation?

5th. What experiences have been made over the efficacy of the "French caustic" recommended by our colleague Schrott?

6th. Is morphine an essential element in the ordinary corrosive paste? or will arsenious acid with creasote (or carbolic acid) perform the same service?

7th. The nitrous oxide and ethyl chloride question.

8th. Is it possible to bleach a tooth discolored through extravasation of blood into the dentine?

9th. What experiences have been had regarding the influence of chloride of zinc cements upon the life of the exposed tooth pulp?

10th. Are there unmistakable indications for the employment of cohesive and non-cohesive gold foils, and wherein do they consist?

11th. Communications from practice:

a. Certain observations upon extraction of the teeth.

b. Extraordinary pathological occurrences in the jaws and gums, fractures, fissures, etc.

c. Experiences in the preparation of carious cavities for filling, wounding of the tooth pulp, extravasation of blood into the dentine, etc.

d. False position and regulation of the teeth. The colleagues are requested to bring with them models of interesting cases, both before and after treatment, and to give demonstrations.

12th. What experiences have been had in the powers of medicaments

and mineral spring waters, and in what manner can the pernicious influences of these agents upon the teeth be overcome?

13th. Is there any experience in the use of phosphates of lime for feeble patients and children, and in what form are they most suitably administered?

14th. To what causes is the bad breath from the mouth to be attributed, and how is it to be most surely and permanently cured?

Besides these, the following gentlemen have announced essays:

1st. Dr. Flörke, of Bremen, "Our Time." A searching criticism upon the newest and most generally used dental instruments, apparatus, etc. of the present time.

2d. By the same, on extraction of the tooth pulp.

3d. Dr. William Süersen, Sr., of Berlin, on wounds, such as fractures of the upper and lower jaw, with demonstration.

4th. Sauer, Berlin, on aluminium, exhibiting a new method of working the metal, with demonstrations.

5th. Hagelberg, Berlin, on a new method of working rubber, with demonstrations.

6th. Dr. von Langsdorff, Freiburg, Baden, on dental educational establishments.

7th. A. Seiffert, Potsdam, on the formation of a dental protective fund.

Those who take part in the yearly meeting are invited to present questions, which seem to them of enough importance, to the President, or to throw them anonymously into the question-box that hangs in the hall. Scientific reports, communications upon observations, and experiences in dental practice, as well as demonstrations on operative and technical subjects, are always desired. They must, however, be announced to the President, in order that he may assign them their proper place.

The remainder of the programme pertains to elections, disbursements, etc., and is not of interest to us. It will be noticed, in glancing over this list of subjects, that "Dr." is not applied indiscriminately to all the members, but only to those who have the title legally. We see, also, that they are discussing many of the same things that interest us at our own meetings, as well as some questions that rarely present themselves before us. The 10th question indicates an advance upon our wholesale mode of filling all cavities in substantially the same way.

In regulating, there were a few cases of considerable interest, exhibiting great ingenuity and patience, and ultimating in a success that was very gratifying.

Several of these were done by F. Oehlicker, of Hamburg, the maker of the oxychlo. zinc, that has obtained some celebrity.

Dr. G. von Langsdorff had a number of cases of restoration of lost parts, after the wounds caused by bullets and hand-grenades in the recent fighting.

Photographs and models were shown, giving a very perfect idea of the cases, which showed, indeed, a great degree of care and skill on the part of the operator.

Mr. Hartung, of Nuremberg, exhibited an artificial nose, well made, and fitted, quite as nice as anything in that line that I remember to have lately seen.

The drollest discussions to me were those upon bad breaths and dental educational establishments.

The former subject, though disagreeable enough, did not seem to be understood at all by any of the participants in the discussion, and they nearly all contented themselves by recommending some sort of recipe for a nostrum which was supposed to do the work; they did not seem to go back to the three or four main causes of the affliction, and require the removal of these causes, but they deluged the mass with disinfectants, and believed they had done their duty.

The discussion on the other subject was led by Drs. Zeitmann, of Frankfort-on-the-Main, and Von Langsdorff, of Freiburg; the former contending that inasmuch as the German universities were more thorough and more scientific than the American schools, therefore dentists educated at those institutions were the best, indubitably; while Dr. von Langsdorf, who has enjoyed the advantages of an American dental training, took the ground that superadding special training to a good general education was the best course to pursue to attain to the greatest excellence, and cited incidents and cases. His opponent replied that he was a German, educated in Germany, in the German fashion, which was the best, and he should always adhere to it; therefore comment on this style of reasoning is unnecessary, and, as my paper is already too long, I will here end it.

PREPARATION AND TREATMENT OF TEETH FOR FILLING WHEN THE PULP IS EXPOSED, OR WHEN, BY LONG EXPOSURE, IT HAS BECOME DEVITALIZED.

BY S. B. PALMER, SYRACUSE, N. Y.

It is well known that very many dentists have no confidence in the practice of restoring teeth in the condition above named, and the patient being ready to take the offered prescription, submits to the loss of teeth, not to be replaced, in point of usefulness or convenience, by any human agency.

Another impediment in the way of success in a second-class practice, is the low estimated value of a tooth,—which has been fixed by the cost of an artificial substitute inserted on rubber.

This evil can only be overcome by the dentist first knowing what he may reasonably expect to accomplish, and then by imparting that knowledge to the patient. This has been done, and the profession has a right to expect each of us to bear our portion in giving instruction to our patients, to aid in elevating their minds to a better appreciation of the nature of teeth.

We would not have selected this oft-repeated subject did we not know that the treatment for diseases arising from devitalized teeth is varied, even among the most successful; also, that a want of success with others has caused them to look upon such operations with much doubt and uncertainty.

That men can be found who claim for themselves the title of dentist, and still doubt the utility of filling teeth, may be regarded as a wonder; but there are those who can perform fair operations, that consider a tooth of little value when the pulp has been reached by decay.

That teeth, however, are rendered serviceable for many years, perhaps for life, even where the pulp exposure has been the cause of alveolar abscess of long standing, is a fact too well known to require argument. How are such results obtained, and what are the remedies used? are questions of importance, which we propose to answer, so far as we are able, from our own practice and observation. And while our operations have generally been crowned with success, we confess our inability to accomplish cures with the ease or in anything like the short time given by others, as reported in the journals. Our greatest achievements have been secured by persistent and patient efforts,—in several cases, for five or six months.

We will consider the preparation for filling a tooth with the pulp exposed and sensitive, or while it still retains its vitality. Casting aside the practice of capping the pulp, on account of repeated failures and the still later discovery of extirpating a portion of the pulp, allowing the remainder to retain its vitality under a filling, for want of experience, we decide to destroy the nerve, and remove all that is possible from the pulp cavity and canal of the fangs.

Our first effort is to remove all decay from over and around the pulp possible; frequently we cannot do this as we would like to. We deem it important to know that the pulp is bared, or exposed sufficiently to allow of expansion. When we cannot judge for ourselves, we direct the patient to exhaust the air from the cavity; and if by so doing pain is produced, we feel at liberty to apply the medicine. But to make the application without a free exposure, and depend upon the action of the remedies by absorption through the dentine or decayed investment, we not only are liable to produce excessive pain, but are in great danger of causing infiltration of the coloring matter of the blood from the congested pulp into the dentine, giving to the teeth at first a reddish, and afterward a blue or black appearance.

When the cavity is ready, place upon a glass slab as much arsenious acid as we desire to use, not to exceed in bulk one-half the size of a small pin-head if used clear, and we cannot see any advantage in the addition of morphia. Take a small pellet of cotton, perhaps twice the size of a pin-head, moisten this with creasote (if the cotton becomes saturated, apply it to a napkin or bibulous paper, until the excess of creasote is removed, that none may flow from the cavity when the filling is placed upon it), fix the pellet upon the point of a suitable instrument and press it upon the powder or arsenious paste, and with care convey it to the pulp; and fill the balance of the cavity with Hill's stopping, an article superior to any other we have used, being easily applied when warm, and not liable to come out, and sufficiently hard to resist pressure from food in mastication. We have used cotton and varnish, but not with very good results, in contact with creasote; either the gum in the varnish incloses the arsenic and prevents its action upon the pulp, or the alcohol uniting with the creasote destroys its efficacy in relieving pain. When a tooth has been treated in the manner described, we choose to let it remain from two to three days, at which time, if convenient, we would remove the application, and, on finding the surface of the pulp devitalized, apply creasote only, with another filling of Hill's stopping, which we allow to remain from eight to ten days,—the most favorable time to remove the nerve from the canals of the fangs. About that time it will be found to be detached from the walls sufficiently to be easily removed and brought away whole.

After removing the pulp (and we acknowledge that we cannot always accomplish our desires in that direction), we consider the tooth ready for filling. But before leaving this portion of our subject, we again refer to the time of allowing the arsenic to remain in a tooth when not convenient to see the patient. For many years we were very careful not to allow the preparation to remain in a tooth more than three or four days, basing our fears upon the statements of others. If by any circumstance we could not remove the application, we expected to witness dental periostitis or alveolar abscess as the result of absorption of the agent; and yet, notwithstanding we failed to find the evils above mentioned, we dared not introduce an extension of time until strengthened by the success attending Dr. Westcott's operations, and now we do not apprehend any evil results in applying the small amount of arsenious acid used, even when to remain in the tooth for months. What a large portion might do we cannot say.

Periodontitis comes next after death and decomposition of the pulp. External influences may produce periodontitis, such as deposits of tartar beneath the gums, a blow, or clumsily-fitting mechanical appliances for supporting artificial dentures, too vigorous wedging of teeth preparatory to filling, and sometimes from undue pressure in condensing fill-

ings. Yet all these, perhaps, will not equal that of the first mentioned; the decomposition of the pulp, poisonous and irritating in its nature, passing through the fangs of the teeth, overtaxes if not diseases the absorbent vessels, and the result is inflammation or periodontitis. For the relief of pain in the early stages of periodontitis, the application of ice to the gums (not to the tooth), for a simple remedy, is very valuable. Camphor and ether, or chloroform, mixed and applied, is cooling at first; after a few applications, causes counter-irritation, and frequently effects a cure.

Such are the simple remedies that we can advise for our patients to use themselves; but in severe cases we rely upon iodine and creasote mixed; with a splint wound with cotton charged with the remedy, paint the inflamed gums around the tooth, covering the same with a thin pad of cotton, to protect the lips or check. When this remedy fails, we look for the third stage of disease, alveolar abscess, which is suppuration of the periosteum, or partial detachment of the tooth from the tissue surrounding it.

The causes which give rise to this troublesome disease, like those producing periostitis, are varied, but it arises most frequently from the death of the pulp. Yet we meet with cases very difficult to treat, arising from deposits of tartar around the neck of a tooth, or from the pressure of food in mastication, as will sometimes occur by a space between two teeth, so formed as to retain whatever passes between the corners of the teeth, driving the gums back toward the end of the fangs, until periostitis and abscess is the result. This condition, as well as that caused by deposits of tartar, may cause the tooth to become very loose and still retain the vitality of the pulp.

All these various forms are common to every observing practitioner, and we will not pursue the causes or conditions further, but close with a statement of the remedies most effectual with us.

Of the application to abscess caused by external irritants, we usually find the gums detached from the tooth, perhaps on one side only, the alveolus or socket enlarged, and pus exuding from between the gums and tooth. To such a condition we would apply a saturated solution of iodine and creasote, introducing it into the space by a splint wound with cotton; when cotton cannot be used on account of size, a piece of wood, whittled thin like a toothpick, bruised at the end, dipped in the preparation, will enable the operator to reach all the diseased parts. This remedy we use but once, and await the results; if, after a week or two, we find pus still present, we repeat it. A daily application would hinder Nature's operations to effect a cure. We do, however, if we have the opportunity, use the following milder dressing, both in the seat of the abscess and around that portion of the gums covering the tooth and alveolus: wine of opium and tincture of iodine.

For an abscess caused by the death of the pulp, if an opening has been established through the alveolus and the gums, introduce creasote through the canal of the fangs, forcing it in with soft rubber; such as is used for plates answers the purpose very well. If the caustic effects of the creasote can be detected as it escapes from the orifice of the abscess, the most favorable results may be expected. This desired condition cannot always be attained; sometimes the second or third trial will be successful.

As soon as we can accomplish a passage in this manner, we clear the fangs, and fill them firmly with cotton, and the crown with Hill's stopping. Usually the abscess disappears, and the gums become healthy. If not, repeat the operation, using the iodine and creasote, as already described. In a front tooth there would be some danger of discoloring the tooth with the iodine.

Where no fistulous opening has been established through the gums, and pus is evidently escaping through the teeth, the same remedies and means of introduction may be employed; but do not close up the passage until several days have elapsed, and not then so firmly but that in case of inflammation of the periosteum the passage can be opened.

Do you ask how long a time may be required before a filling can be safely inserted? We say in a few weeks after all trouble has ceased, provided the fangs have been firmly closed.

We would caution against a free use of creasote at the time of inserting the plug permanently, as the amount liable to be forced through the fangs might tax the delicate absorbent vessels, and thereby produce disease in healthy tissues.

For the encouragement of those desirous of success, we say perseverance is necessary both in operator and patient; with that a cure is almost certain. We have in remembrance three obstinate cases, which we consider cured, that resisted our best efforts from three to six months.

ON ROOT PLUGGING.

BY A. J. REDERICK, D.D.S., SIOUX CITY, IOWA.

I HAVE before me ten inferior first molars, ten inferior second molars, ten first and second inferior bicuspids; also the same number of teeth of the superior maxilla of the same class. In selecting the molars, those with large crown cavities were chosen, for a purpose I shall hereafter explain.

Drills of various sizes and different degrees of temperature were made, care being taken not to overheat the steel beyond a cherry red. These were all draw filed, after closing the grain by hammering when cold, and thoroughly polished on emery wheels; the shape of these

drills is that of carpenters' chisels, if the bevel, instead of being on one side, be equally divided on both ; one half of these are spring tempered, the other soft. The cutting edge of both are tempered as any other drill.

A first superior molar, with large crown cavity, is well opened into pulp chamber so as to expose the canals of each root. The anterior buccal root is curved a little the whole distance from the bifurcation, but more towards the apex.

This root I attempted to drill through to the apex with the spring-tempered drill, but was unable to go beyond the second curvature, when the drill left the canal and went through one-eighth of an inch (outside measurement) from the foramen; on filing down upon the root so as to expose the tract taken by the drill, I found the distance left between the apex or foramen to where the canal was left by the drill to be about one-fourth of an inch, with the drill chips forced into and occluding the remainder of the channel.

Another superior molar, with same root, slightly flattened straight, excepting apex curved like the first, was drilled, with results substantially the same, the drill leaving a canal at the curve.

The posterior buccal roots of these molars I succeeded in drilling to the apex.

The soft drills were tried on similar teeth. The first was opened rather below the curve, as compared with the spring-tempered drills, but the binding and friction at that depth twisted them slightly, so as to cause them to break in using them the second time.

Smaller and larger ones were tried with similar results, with the exception that the smaller the drill the nearer the apex was reached.

In all these cases, after wiping out the cavity with a fine broach wound with cotton, and others with hooks at the end, there remained chips which I could not remove, the greater proportion being at the end drilled, and invariably the foramen was clogged, which no broach or syringing could remove.

A number of the anterior roots of inferior molars were drilled with results substantially the same. To ascertain how far to drill so as to get "just at the apex," no farther, a number of both inferior and superior molars were selected, having large grinding surface cavities, which were well opened with a large bur drill, but care was taken not to cut upon the floor of the pulp chamber. A thin silver plate, with a small hole, is then placed across the tooth, bridging the cavity from buccal to lingual quarters; a little wire rod, divided into 16ths and 32ds, is let through the hole of this plate upon the highest point of the floor of the pulp chamber, and the number of 16th's or 32ds marked; and then the length of the roots marked. In twenty teeth, ten superior and ten inferior molars, the result was a proportion as 7 to 16 ; the distance from

bridging across the crown to highest point upon the floor of the pulp chamber being seven, the length of crown and root sixteen, the distance from highest point in pulp chamber to apex of root would be the difference, or *nine*. These measurements are for first and second molars, the third molars being so irregular in the proportion between crown and root as not to admit of any such calculation; yet these cannot be relied upon; if they could, we would have data by which we could know to within a small fraction the length of the canal of a tooth under treatment. That this is the case, I will mention shortening of the roots by absorption. I have a cuspid, the crown of which is perfect in every particular except in color; the root of this tooth is but two-thirds the length of the crown.

The foramen is not always at the apex of the root, varying sometimes from one- to six-sixteenths of an inch. Nodular ossific prominences are often found at the bottom of pulp chambers; sometimes the chamber is very much reduced in size, especially in the teeth of the aged, through peripheral calcification of the pulp, and sometimes we have no chamber, its place being occupied by "osteo-dentine." These pathological and physiological conditions will always make calculations in the proportion between crown and root uncertain and unreliable. The superior bicuspids have not the regularity generally observed in the superior molars in regard to number of roots.

The pulps of these teeth resemble in general shape and outline the tooth itself in the upper portion, being, in this respect, like the rest of the upper teeth; but, after reaching from one-third to one-half the distance towards the apex of the root, we have almost a repetition of the anterior root of the inferior molar,—two well-defined small canals, generally terminating at the apex; but frequently the canal is a mere fissure, preserving this fissure or slit shape until within one-fourth or five-sixteenths of an inch from the apex, when it divides into two canals to again resume its former shape.

The island or obstruction is often composed of nodules of dentine, but as frequently the condition seems normal (I say normal because these are not exceptional cases; they occur quite frequently). Teeth placed in a position so conspicuous, with an antero-posterior diameter less than any other in the arch, are found decayed after the first molars more frequently than any of the other teeth, and upon their approximal surfaces; most frequently filled; yet often resulting in complete failure when requiring treatment for abscess, or removal of pulp from inability to preserve it, the condition of the canals being the very worst to be properly filled to the apex; in such cases it simply cannot be done.

The lower bicuspids have a single well-defined canal, with a root generally straight

But in the lower incisors which require root plugging from wearing

down of the cutting edges, we find a small, slit-shape canal, terminating in a minute foramen at the apex; yet not always so. I have found two foramina in these teeth. After cutting lengthwise twenty of these teeth (centrals), two of them were found to have two distinct canals, five-sixteenths of an inch from the apex, which could not be determined by either introducing a fine broach with the barbs smoothed down, or by drilling.

In the above dissection I have chosen teeth not from any peculiarities of form, but as they were extracted and classified for the purpose.

Now, since the "theory" of capping exposed pulps contains more of it than practical usefulness, especially in cases of long exposure, where we have a low, chronic inflammation; since some of the best practitioners of dentistry, who at one time had strong faith in the virtues of oxychloride, are now distrustful of the salvation of exposed pulps when alveolar abscess follows many promising cases, the effect would naturally be to shake one's own faith, and follow the "oracles" back to the old field of pulp destruction and root plugging, with all its complications. I think a little eclectic practice,—a little reliance upon our own practice,—a little faith in our successes, would, with proper discrimination, enable us to determine some facts as to when, where, how, and under what circumstances to use oxychloride or arsenic. In a freshly-exposed pulp I should have no hesitation in capping, but in a case of long standing I would feel safer in destroying the pulp and resorting to root plugging.

That root filling can be relied upon when properly done, we have evidence of the fact presenting itself every day, when the operation has been well performed. If the ROOTS are THOROUGHLY filled, we need apprehend no future trouble, unless our patient labors under some constitutional disease, such as scrofula or syphilis, in which cases we may succeed, but often any amount of treatment amounts to naught. That complete removal of the pulp, without filling its place, will not do, but result in abscess, we have to refer only to those cases where such treatment was practiced, and always requiring the "*vent hole*" at the neck of the tooth—filling one cavity to prevent the tooth from decaying, and making another to destroy both. Therefore, to successfully preserve a tooth from future pain, root filling becomes absolutely necessary, and our success depends upon the thoroughness with which it is done.

Hence for these reasons I have been led to study the anatomy of the roots of teeth, in doing which I have learned much that was contradictory to what was taught in the books, and have come to the following conclusions:

That it is utterly impossible in the majority of cases to extirpate the pulp and fill to the apex the canals in the anterior root of inferior molars, superior bicuspids, and the anterior buccal root of first and second supe-

rior molars. The wisdom, or third molar teeth, have no definite number of either roots or canals. That a crooked canal cannot be drilled with a spring-tempered drill without passing out of the canal, taking a straight course. That we have no definite knowledge of the length of any root by measurements from surface of crown to floor of pulp chamber, the size of crown being no index to size or length of roots (I am aware that in this particular I am in conflict with authorities). That the superior bicuspids sometimes have more than two canals. That the anterior buccal roots of superior first and second molars often have two distinct nerve canals. The division of canals within three- to five-sixteenths from apex cannot be ascertained by either the broach or drill, nor remedied if such be the case, dissection alone revealing these conditions. Tortuous canals containing nodules of "osteo-dentine" will effectually prevent the further removal of pulp. That the shoulder formed by the drill will prevent the passage of gold beyond that point. Yet with all these obstacles, unfavorable as they may appear, root filling, compared with capping, is decidedly more successful.

A tooth can be preserved free from abscess in subjects of good constitution without the thorough filling of these roots to apex, as the filling to apex is the exception. Yet these teeth are reliable. Why the remains in these roots do not always produce abscess, I should account for, not on the antiseptic properties of carbolic acid or chloride of zinc, —because the effect of either of these agents would be to shrivel up and harden this organ so that it would no more fill up the contents of the canal, and fluids from the surrounding parts would permeate the structure, undergo decomposition, resolve themselves into gases, the pressure of which would produce inflammation, which may go beyond the first stages and produce abscess; *but by absorption of these gases*, when the quantity is not *too large*, so as not to overtax, or overburden the capillaries and absorbents.

That poisons and gases can be disposed of by the general circulation, is a matter of daily occurrence. Some of the most virulent poisons, such as strychnia, belladonna, aconite, etc., are used for their beneficial medicinal effects in paralysis, neuralgia, as anthelmintic, etc.; yet if the quantity is so great as to overtax the nervous system, or overcome the heart's action, the animal functions cease, and death ensues. It is well known that tubercles in the lungs of consumptives, who remove to those climates where the air is rarefied and dry, cease to enlarge, and sometimes disappear through absorption.

Why is it that the palatine roots of superior molars are the first to give trouble, and most generally abscessed, when the canals are not filled, and the last when they are? Is it not because these contain the largest amount of space capable of greater accumulations for future decomposition?

Hence I am forced to the conclusion that the structure surrounding the roots, and the process, periosteum, and pericementum, are capable of removing a definite amount of gases and poisons, and when this amount is increased abscess follows. I mean the vessels of these membranes.

In filling nerve cavities, I have best succeeded with a nerve instrument, six or seven inches, filed down square about two-thirds of an inch to the size of a small nerve broach, and brought to a sharp point, very smooth, on which is wound a triangular strip of No. 4 adhesive (very adhesive) gold, about an inch in length and one-third of an inch in width at the wide end, and the other brought to a point. This point is wound first, one-quarter of an inch back from the end of the instrument, so that when all wound, it will extend beyond the point a little, and have a uniform surface, canal shape. In winding, I use a buckskin glove on left hand, so that the perspiration will not affect the adhesion of the gold. The gold is now freed from the broach by means of a pair of pliers, and point of broach dipped into creasote, and again introduced. Everything being ready, introduce this point gradually until it has reached its destination, and remove the broach; should it break it will do no harm.

Another plan, very effectual, is to take small nerve broaches, rub down, between a pair of pliers, the barbs; wind gold around, as in the other case; cut off right length, and force home with a nerve plugger. This plan, I believe, is original with Dr. Latimer. Either of these modes answers the purpose better than any other I am acquainted with.

SPLITTING OF A TOOTH BY DECOMPOSITION OF THE PULP.

BY J. H. M'QUILLEN, M.D., D.D.S.,
PROFESSOR OF PHYSIOLOGY IN PHILADELPHIA DENTAL COLLEGE.

C. G., Esq., called upon me in the first part of October, 1871, complaining of severe pain in the right superior first bicuspid; the pain had continued for several days, and had been a constant source of annoyance. On examination, the tooth was found perfectly sound, with not the slightest evidence of any defect of structure, or decay; the gum around it, however, was somewhat inflamed and swollen, and on striking the tooth with an instrument, or on the occlusion of the jaws, the pain was increased in intensity.

After a careful consideration of the case, I stated to the patient that I had reason to believe that his difficulty had its origin in the calcification of the bulbous portion of the pulp of the tooth, exhibiting to him at the same time, in illustration of my meaning, three fine specimens of calcification of the pulp, which had been forwarded to me by Dr. G. W. Matteson, of Michigan. The calcification in his tooth had apparently

excited a certain amount of irritation in the remaining portion of the pulp, and this had been extended to the membranes covering the root and lining the alveolus. An application of aconite and iodine was made to the gum, which afforded decided relief to the patient. This application was repeated two or three successive mornings, with the same result. At the expiration of this time the patient, being engaged on an important case in court, was compelled to discontinue his visits to my office. Something like two or three weeks passed over without hearing from him, when I received the following note:

"DEAR DOCTOR,—With your permission, I will stop at the office to-morrow, at half-past eight. Is it possible that the solidification or ossification of that central pulp which you explained to me could have been accompanied by expansion, and thus have broken the tooth in two in its length? I think the fissure is there.

"Truly yours, G."

At the time appointed the gentleman made his appearance, and, on examination, a longitudinal fissure dividing the two cusps was readily perceived. The pain in the tooth during his absence had returned with increased intensity. All of a sudden it ceased, and then he discovered the fissure dividing the tooth into two halves.

After completing the examination, I remarked that my previous diagnosis had not been correct, that his difficulty had evidently been due to a devitalization of the pulp, from some cause or other, and that the dead pulp had undergone decomposition, and gases had been generated in the pulp cavity, which had exerted sufficient force to split the tooth.

I had heard and read of such cases before, in some of which the writers stated that the cleavage or bursting of the tooth had been attended with a loud explosive sound, seeming to the patient like the discharge of a pistol. This was the first case of the kind, however, which had ever come under my own observation. I advised the immediate removal of the tooth; and, as the patient did not desire to suffer unnecessary pain, we called upon Dr. T. R. Thomas, who administered the nitrous oxide, and it was extracted while he was completely under the influence. After the removal the fracture was found to extend longitudinally through the centre of the tooth to the point where the buccal and palatine roots bifurcated. The greater portion of the palatine root had been absorbed, while the bulbous portion of the pulp cavity was occupied by the remains of the putrescent pulp.

The case was very interesting and instructive to me, as I had been rather skeptical with regard to the description of cases of a similar character that I had met with heretofore. The evidence presented in this instance was so unmistakable and convincing, that I could arrive at no other conclusion than that the cleavage was due to the force exerted by the gases which had been formed in the pulp cavity.

A SEPARATION OF THE INFERIOR CENTRAL INCISORS.

BY LONEDO FRAZEE, BROOKLYN, N.Y.

A PHENOMENON that is quite interesting, respecting a separation of teeth, presented itself to my notice but a few days prior to writing this. The subject was a respectable young lady, aged about twenty years, with a temperament approximating the sanguineous.

The lady's object in calling at our office was to consult in reference to having two artificial teeth inserted between the two inferior central incisors, for which there was *sufficient* space. On the first casual observation of the teeth, I was impressed with the belief that the two central incisors were absent; but, on the contrary, I found all the teeth, with the exception of one of the molars, were present, and not in the least decayed. All the front teeth were in an excellent condition, both as regards their soundness and regularity, with the exception of the separation, and void of all accretions whatever. The incisors of the inferior maxilla, instead of inclining to one side, as is frequently the case where there are separations, were in perpendicular positions, and the gum and alveoli were in an apparent healthy condition.

Though the relative position of the teeth was admirable—as regards the articulation—the arch, however, of the alveolar process was considerably enlarged, necessarily, the upper teeth having assumed a protruding aspect, though by no means unsightly. This was only observable by raising the upper lip; otherwise the lady presented symmetrical features. The front teeth and the alveolar process of the superior maxilla, to a certain degree, had been forced forward,—the result of a uniformly articulating set of teeth. The gum at the separation was in a healthy state, but the alveolus had been quite thoroughly absorbed, leaving a deep depression both at the lingual and labial surfaces. Now, the cause of this uncommon separation is referable to an injudicious use of the gum-elastic in childhood.

When she was nine years of age there was a piece of elastic inserted between the central incisors of the inferior maxilla, for the purpose of regulating them, as they were lapped to an ugly extent, and the elastic, inflicting some agony, was allowed to remain in until it came out of itself; and from that time to the present there has been continual spontaneous separation going on. For the past eighteen months there has been an acceleration in its progress; and it was with no little solicitude the lady consulted me.

This cannot be deemed a topic for idle consideration: the peculiar nature of the case deserves special attention, particularly as to the expediency of separating central incisors of the inferior maxilla. Had the separation been performed between teeth other than the centrals, doubtless the teeth would have moved no farther than the limits of the

dentist's intention ; but observing the fact that the separation was performed over the symphysis menti, at which location, at that period of life, the bone and membrane being in an immature and delicate stage, it is not very surprising to have met with such a result.

Similar cases have come under our notice on several occasions, yet in a more moderate form ; but the degree of alteration with which the alveolar process of this case has been involved merits more than a cursory notice. It was but a short time ago that a lady called on me for the purpose of having the four upper incisors extracted. The teeth were beautiful, but owing to an inordinate separation she despaired of having them regulated, and, consequently, under protest, they were extracted. The cause of this deformity is obvious: the cuspidati and buccal teeth were all absent; whereas, in the case in question, there was only one molar absent, which, from the space left, could not have been accessory to the difficulty in the lower incisors.

In separating central incisors, of children in particular, there is necessarily great strain on the alveoli of the two teeth, and continuing the operation a partial severance of the alveolus takes place ; and, as a consequence, periostitis and absorption supervene. The bone becoming weakened and in a measure devitalized, gives readily to the pressure of the antagonizing teeth of the superior maxilla. Having lost their mutual union, to a limited extent, the two bones enter upon their lateral tendencies unceasingly, rendering an irretrievable ruin to the appearance and contour of the alveolar arch. While urging discretion and care in the use of the gum-elastic in separating teeth, both of the central as well as of the lateral incisors, it is but necessary to take a retrospective view of cases of necrosed teeth and exfoliated alveoli, in consequence of rapid and early separations, to assure one of the necessity of extending a little attention to this specialty of the profession.

Thus denouncing the too frequent use of the gum-elastic or rubber for separating teeth, it may be better to encourage the more general use of cotton and the wedge. Teeth separated with cotton or the wedge incur less pain, and the work is accomplished almost as expeditiously as with the use of the rubber. Although I do not denounce the elastic in its entireness, yet it is preferable to have a more moderate use of it. It is not to be inferred, however, that all teeth separated with the elastic necessarily remain separated ; for, on the contrary, it very often occurs that a tooth which has been crowding against an adjacent one, having been pressed aside and then freed, returns, pressing the tooth again with more vehemence than ever.

CHRONIC OPHTHALMIA CURED BY TAKING OUT OF A TOOTH.

BY DR. BLANC.

(Abstracted from the Revue de Thérapeut. Médico-Chirurg. for August, 1871.)

CHARNÈRE, of the 98th line regiment, came into the hospital the 3d of July, for inflammation of the left eye. The disease had commenced the previous February, whilst he was a prisoner in Prussia. He was there seen numerous times by the doctor charged with attending the prisoners, and followed his advice without success. The 20th of April he was sent to the Hospital of Krekon, where he remained two months without receiving any relief, until he was sent back to France.

When he entered the hospital the note was: July 3d. Ocular and palpebral mucous membranes both very red, the radiating vessels crowding up to the cornea; continuous pain, exacerbated at intervals and especially at night; photophobia intense, head heavy and painful, tongue coated, appetite poor, pulse small and frequent. Treatment. Ten leeches to the angle of the left jaw, collyrium of sulphate of zinc, diluent tisane of one-half a quart. 4th. Marked improvement; treatment continued without the leeches. 5th and 6th. Still better. 7th. A blister to the nucha. 9th. Last night the worst that he has had.

Finding his patient becoming worse, Dr. Blanc, remembering an article of Dr. Tavignot (*Revue de Thérap. Médico-Chir.*, April, 1871), now inquired into the condition of the man's teeth, and finding the first upper molar of the left side very bad, extracted it. After the operation there was rapid and steady amendment of all the symptoms. On the 15th of July the patient was surprised reading a newspaper, and on the 21st was dismissed cured.

THE CUMMINGS PATENT.

BY H. F. BISHOP, D.D.S., WORCESTER, MASS.

PERMIT me to call attention through the dental journals to the fact that but a few months only of the Goodyear patent now remains unexpired to bother the dentists. The Goodyear patent expires next May. Its last extension was a crying shame, but, nevertheless, we had to submit to it.

The Cummings patent is as worthless as straw, and I trust no dentist will respect it,—notwithstanding it has been coupled with the Goodyear patent in an *ex parte* license contract, and its recognition enforced by the Rubber Company upon the dentists.

The Cummings patent, applied for and issued long after the general

introduction of rubber into the profession, has no claim whatever upon us, nor are all those licenses which we have been obliged to sign, at all expressive, in any sense, of any choice on our part; nor have we had anything to say about a mutual agreement, but simply to accept their terms or be deprived of the use of the rubber. On the principle of a highway robber, they have said to us, "Your money!—or you will be sorry." I think every dentist will regard his contract with the Rubber Company as binding as he would a promise to a highway robber, and I cannot think he would respect it much more.

A case has occurred where the Vulcanite Company immediately abandoned their cause upon the filing of a replication in a suit where the Cummings patent alone was in question. I refer to the case of Dr. T. B. Gunning, of New York (and I wish that replication, which is in print, might be published in the dental journals). It is a very able defense, and covers the whole ground, and gives the Cummings patent no foundation in fact to stand upon. No doubt a shrewd plan of getting each and every dentist committed for a year or so, will be introduced by the Rubber Company at the commencement of the new year,—although they well know they have but four months or so wherein they can make any valid claim upon us. Let each decide what he will do before the new year comes in. Many can, without doubt, relinquish the use for that short time. All ought to use freely after the expiration of the time without any royalty to anybody.

It will be wisdom to have a fund to try this issue with the Rubber Company (if they see fit to press the matter) by a combination of the dentists, which will have every prospect of success if there is any justice to be had.

Having been favored with the opportunity of perusing the above communication of Dr. Bishop before publication, permit me to say a few words on the same subject.

I am of opinion that to publish such an utterance of the actual feelings and sentiments of dentists concerning the great extortion practiced upon them by the Boston Dental Vulcanite Company will do good, by arousing them to think about and devise some means of escape.

There is about the present relation such absolute helplessness on the side of the dentist as may beget a habit of dull inaction and chronic submission. Indignant protests like this of Dr. B. may counteract the lethargy. It is not of much consequence that he calls that a robbery which is only an extortion, so that the profession is animated to resist as soon as resistance may be made with any hope of success.

If the reply of Dr. T. B. Gunning, of New York, has the value which

Dr. B. attaches to it, its publication in such a way as that it can be read by all is very desirable. But the mere discontinuance of a suit is not, of itself, any conclusive proof of the Josiah Bacon party being scared off by the answer of the defendant. So many other reasons might induce delay or even "abandonment," that the value of "that replication" can only be known by weighing its intrinsic and comparative merit: surely not by its result in that particular case.

Seriously, we do not believe that either the Dental Vulcanite Company or the Cummings patent are put *hors de combat* by any *untried* case. The dentists cannot afford thus to undervalue their enemy.

The facts which they must meet and contend with, if they would escape the fleecing which Dr. B. so aptly characterizes as a "stand-and-deliver-and-no-choice-about-it-robbery" are that, just as it now stands, the Cummings is a legal patent, and has been several times sustained in court; that they are thus quietly working—by collusive judgments, if you choose to call them so—toward a standing in the U. S. courts which will entitle them to an immediate injunction upon any infringer against whom they may choose to file a bill. Talk is of no use except to arouse the profession in interest to make and execute a defense and resistance which will expose the rottenness of the Cummings patent and break it.

It is merely a question of dollars and submission, or dollars and resistance.

No one person is likely to assume the strife in behalf of those who are suffering, but if a Curtius exists who is willing thus to sacrifice himself, the time is drawing nigh for him to make the leap.

H. C.

Note by the Publisher.

Desiring to assist the profession in every way possible in a resistance to the galling imposition under which they suffer, we wrote—after the above communications were in type—to Dr. T. B. Gunning, requesting him to furnish a copy of his reply in the case alluded to for publication.

In his answer to our note, he says: "I have looked carefully over the papers connected with the suit referred to, and in answer, beg to say that I do not consider that their publication in the Dental Cosmos, at this time, at all likely to benefit the dental profession,"—which seems to indicate that Dr. Bishop has been misinformed, or that he has over-estimated its value. Our pages are always open to anything which promises to benefit the profession in this contest.

MISCELLANY.

ABSTRACTS AND SELECTIONS.

BY J. W. WHITE.

DENTAL TIMES.

Dr. Elihu R. Pettit gives a case in practice, showing the "Injurious Effects of Amalgam."

"On October 1st, 1868, I inserted a large amalgam filling in the second inferior left molar, mesial and grinding surfaces. On the 8th of the same month the patient, Mrs. P., ate two or three fried oysters, and almost immediately afterward became very sick at the stomach,—without vomiting, however, but with a rash breaking out upon her face and neck, with itching, and œdema of the face and eyelids. But the next day she was quite well, except that the rash had not entirely disappeared. About a month afterward, again partaking of oysters, the same symptoms returned, with coldness of the extremities, to such a degree as to become alarming. Attributing these symptoms to the oysters, she abstained from them entirely.

"On the 17th of May, 1870, I applied the arsenical paste to the pulp of the right inferior second molar tooth of the same patient, in the usual manner. About an hour later, after the lady had returned to her home, the symptoms above mentioned reappeared. She returned the next day, when I cleaned out the cavity and removed the pulp. The rash had then partially disappeared. On the succeeding day, the 19th, when she returned to have the tooth filled, she complained of all her teeth being sore, and some of them slightly loose, but especially those on the right side of the mouth, and in the immediate neighborhood of the tooth to the pulp of which the paste had been applied. The rash had also returned in a greater degree than before. I am quite confident that the patient could not have swallowed any of the paste, although the cavity was on the proximal surface, and the tooth was properly protected by napkins, so that these effects must have been produced entirely by the absorption of the arsenious acid through the pulp. The patient left the city the same day, the 19th, and while absent the same symptoms were produced by fish and radishes.

"The similarity of these symptoms with those produced long before by the oysters point to the same cause for both, as there had previously been no idiosyncrasy in regard to any article of food. Upon careful examination no cause could be discovered why such effects should be produced, when, to test the matter, I removed the amalgam filling, supposing that the mercury might have produced and kept up such a state of irritability in the system that articles of food, which might have even a slight tendency to disagree with her, even if not sufficient to be noticed, might produce such alarming results. Since that time (May, 1870), there has been no return of the symptoms, although she has partaken freely of oysters and such other food as before disagreed with her, thus proving these effects te have been caused by the mercury.

"Although such cases are rare, they are sufficiently frequent to cause us to be on our guard against them, while they should lead us to discard from our practice, wherever it is possible to do so, a substance so insidiously deleterious in its effects. They should lead us also to remove all amalgam from the teeth of any of our patients, who may have

been suffering from ill health from any obscure or uncertain cause, which will not yield to the ordinary remedies; while those who are in the habit of inserting such fillings generally, making gold the exception, incur a responsibility which few, who are aware of such cases, would care to assume."

CANADA JOURNAL OF DENTAL SCIENCE.

Dr. A. C. Stone writes of "Fang Filling and Capping Pulps:"

"As a great variety of substances are used for the purpose of fang filling and capping nerves, and numerous modes of treatment are recommended, a little more light on the subject will do no harm, as we all have our pet method of practice in these cases. I will simply say what mine is and my reasons for following it. We will premise that we have the fangs and pulp cavity perfectly free from all dead nerve and decay, and in good condition for filling: place on a piece of glass a quantity of asbestos, and saturate it with creasote or carbolic acid; dry the fangs and pulp cavity; then with a whalebone or other plugger, fill the fangs and about half of the pulp cavity with the prepared asbestos; a long pellet of gold is then introduced into the tooth and pressed into the pulp cavity, acting as a force pump to push the asbestos and creasote into the fangs, following the first pellet with other large ones, until the pulp cavity is full.

"Asbestos is a mineral of the talc family, incombustible and indestructible, and will retain the creasote much longer than cotton or silk. Cotton, if left in the fang after the creasote has evaporated or been absorbed, will, if any moisture reaches it from the apex of the fang, decompose like any other vegetable substance and produce gases that must find vent some way or other. We are often obliged (more particularly in country practice) to fill teeth affected with alveolar abscess without any chance of previous treatment. I find, in many cases of this kind, that, after cleaning out and enlarging the nerve canals and filling with asbestos and creasote, that the teeth remain useful for many years, and in some instances are entirely restored to health. One tooth saved is worth ten artificial ones inserted. There is no good reason why one copious supply of creasote, applied to the root canals and hermetically sealed there, should not produce the same effects as a dozen ones that are exposed to the triturating action of the saliva. The asbestos absorbs and carries with it into the roots a large quantity of creasote, which is gradually given off to the fangs. So much for fang filling.

"I now come to the capping of exposed, or nearly exposed nerves. After excavating and removing all decay, I drill retaining points on each side of the nerve; I place, with the point of an instrument, a sufficient quantity of asbestos and creasote over the exposed nerve; I then pack gold in all the retaining points around the nerve; then, with a large piece of heavy foil folded so as to represent No. 160, placed so that its outer edges shall cover all the retaining points to which it must be packed, taking care not to press on the centre over the nerve until two or more pieces similar to the first are securely packed around the edges, then, with a large plugger, press the centre upon the asbestos; the cap or bridge will then be strong enough to bear all subsequent pressure required in filling the rest of the cavity. The asbestos is a perfect non-conductor, and the creasote has not that irritating effect that the oxychloride of zinc has upon the nerve and its surroundings."

PROCEEDINGS OF DENTAL SOCIETIES.

ODONTOGRAPHIC SOCIETY OF PENNSYLVANIA.

A MEETING was held at the Philadelphia Dental College building, 108 North Tenth Street, on Wednesday evening, September 6th, 1871.

Dr. Gilmour. The use of plastic materials in filling teeth is by no means new, although the contributions to these certain essentials have been so limited, that in this direction our progress as a profession is scarcely apparent, relatively speaking, whilst we contend there have been advances made in the preparation of cavities, and methods of preventing the encroachment of saliva, during their introduction, that aid materially in producing better results.

In approaching this field of art, any ideas that may be deduced therefrom will be accredited equally to my friend and associate, Dr. Flagg, who has made memoranda which we trust will enable us to arrive at something tangible, and harmonize the merits and demerits of materials used in producing results in every individual case.

When I think of the necessity of judgment in the use of materials for restoring loss in organs belonging to people differing so much in temperament, taste, and habit, the old saying crowds into my mind, and is as true in the direction of tooth as stomach, "What is one man's food is another's poison." How often do we see a soft, friable, white tooth filled beautifully with gold as solid as coin (efforts worth better judgment), and all the edges broken down by rapid white decay, whilst a properly-introduced tin or gutta-percha filling (according to location, either for utility or appearance) would be more compensating to the patient by saving the tooth for years, until a systemic change could be brought about by judicious treatment, which condition would permit of more permanent operations in saving the teeth!

The Guillois cement being the first we experimented with, aside from the stereotyped formulæ of the different oxychloride of zinc fillings, we speak favorably of its slowly crystallizing properties, giving a good opportunity to adapt it to all the inequalities of the cavity; still, with this in its favor, we find by comparison (during strawberry season particularly, and the fruit season generally), that the cohesive part of its make-up yields, and is dissolved, leaving the surface of the plug rough, and becoming more so as fruits are indulged in, until the enamel edges, having no protection, finally chip off, and sad defects are the result.

After an experience of ten months with the German preparation known as Cement Plombe, we speak more favorably of the results obtained, but find it much more difficult to manipulate than Guillois's cement,—requiring at times the services of one to mix *and keep plastic* whilst another introduces it into the cavity (by keeping it plastic, we

mean working it with a spatula up to the point of crystallization, which will give ample time for thoroughly adapting it to the walls of cavities, or making restorations, and does not detract in the least from its becoming hard, which is proved by tablets prepared in this way and compared with others made by merely mixing, and allowing the setting to follow without the touch of an instrument).

The application of the rubber dam is as much a necessity when using the oxychlorides, or any of the baser materials, as in the introduction of gold, and for the same reason: we contend that when a plastic filling is considered the best to save a tooth, the same care and thoroughness should be exercised throughout the operation as if the material was gold; would like to disabuse the minds of some practitioners of the idea that it requires too much time to apply the rubber when only a plastic material is used, and we presume simply because they do not employ it enough to become proficient in its application.

Dr. Long said he had used very little of the oxychloride of zinc for fillings, and had not obtained very satisfactory results with it. He preferred white gutta-percha in cases where he thought it not advisable to use gold or tin.

Dr. Neall was not prepared to speak definitely with regard to the merits of Guillois's cement as a permanent filling, his experience being limited to a little over four months. In the majority of operations performed, he had met with gratifying results. His first experiment was in filling a left inferior first molar in his own mouth, the decay having penetrated nearly to the pulp, and the tooth being extremely sensitive to thermal changes. Beyond a little pain during filling, he has had no unpleasant sensation, and the filling has apparently undergone no change in over four months. He could recall but one instance where the filling had become seriously disintegrated by several weeks' wear, although on others he had noticed a slight roughness, which may be accounted for by the abnormal conditions of the secretions; believed the best way of using the cement is to thoroughly dry the cavity, protecting it with the rubber dam or other appliances before mixing the cement, which should be thick enough to mould easily; had found an advantage in using spunk to absorb the free chloride, thereby preventing considerable pain to sensitive dentine. He allows it to remain in for three or four months, and then he could remove it, and prepare the cavity, and fill it without any pain; had filled several teeth when the pulp could be distinctly seen, but, beyond a slight pain, sometimes continuing for half an hour, had not met with any bad symptoms as yet; in all of these cases the pulp was not inflamed previous to filling; would like still more time before recommending it as equal to gold or tin as a permanent filling, although it is superior to either in its freedom from conduction of heat or cold.

Dr. Litch did not use the rubber dam, for it required so much time to

adjust it. He covered the filling with cotton saturated with sandarac varnish.

Dr. Hewitt used Guillois's cement, and obtained satisfactory results with it.

Dr. Eisenbrey objected to Guillois's cement, on account of the length of time it required for it to set, which was ten minutes at least. Now, it so happens that the teeth only in which he used it were so badly broken down, and the cavity extending so far up the neck of the tooth, that it is impossible to keep the gums pressed away, and prevent the serum and mucus from coming down in the cavity for a longer time than four or five minutes. (These are the cases in which the rubber dam cannot be used successfully.) He preferred Roberts's os-artificiel, because it will set in from three to five minutes, and thinks that ample time to fill almost any tooth with the substance. He rolls it in a cone shape; then directs the apex in the cavity and presses it in bodily; and believes it to be better than introducing small portions at a time. The durability of the different compounds seems to be about equal when successfully put in in the same mouth. He uses Guillois's cement for filling pulp cavities; generally gives fifteen to twenty minutes to harden; then covers with sandarac varnish or solution of gutta-percha.

Dr. Wunderlich had used Roberts's and Killintz's cements for filling teeth with very good success. Care must be taken to keep them dry until they harden. He covers the filling with sandarac varnish; then places a piece of wax over this, and again covers with sandarac, and lets it remain on for three or four days; then removes it and polishes the filling. By this method he succeeded in making some very satisfactory fillings. Some of them had remained perfect for two or three years. As a temporary filling he had found it to be of great value in his practice; also, for filling the bulbous portion of the pulp cavity in treated teeth. In exposed pulps, when there was no inflammation, he had capped them with good results.

ALONZO BOICE, D.D.S., *Reporter*.

FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

A MEETING was held in the Mott Memorial room on Sept. 27th, 1871. The President, Dr. Atkinson, in the chair.

Under the head of "Oral Communications," Dr. Francis reported a visit to Boston to attend the meeting of the American Academy of Dental Science. He found it to be a body composed of many of the old and respected men of Boston, who showed a laudable desire to co-operate with the young men of the professon in advancing the interests of dental science; feared that Boston would take the lead if we of New York were not stimulated to renewed exertions.

Dr. J. S. Latimer read from an evening paper an account of death

from the administration of chloroform in the office of a dentist in Brooklyn. He considered that we ought to refuse to extract teeth for patients under the influence of chloroform.

The Vice-President, Dr. Carr, taking the chair, Dr. Atkinson made some remarks on the use of smooth points in introducing gold. He said he had used them for three years, and considered them better, in view of the perfection of the work as well as the economy of time; and particularly was this so since the advent of heavy gold; thought if men doubted they should see them used to be convinced. He had never until 1869 done as good work as he was now able to do, and since that time he could go through difficult operations without anxiety. He thought it important that the gold be kept over an annealing lamp, and introduced while hot; thought there was little or no pain when used in that condition. Had never yet had it too hot; considered the great advantage in the use of smooth points to be the perfect margins they produce. He didn't care to have the whole of a filling solid if the margins were only perfect. He referred to Dr. Shumway's method of filling teeth with ivory pluggers; said he would not prejudge the merits of that method, for he had never seen teeth filled in that manner; but he didn't see how it could be an improvement, owing to the lack of strength in the ivory.

Dr. Latimer said he used serrated points, as with them he could put the gold just where he wanted it. He didn't care to have it *piled up* in the middle of the cavity.

Dr. Oldham had used ivory pluggers to a limited extent with fair success.

Dr. Francis said he considered dentists a progressive class of men, as they were always going up or down, but gradually up. Methods in vogue years ago were discarded only to be revived at the present time. The smooth points used then gave way to serrations, and now we have smooth points again. Then there was hand pressure and thin gold, which was followed by the mallet and heavy gold, and now in Boston he was surprised at seeing small ivory pluggers used without pressure, the gold being simply rubbed in place, making, as was claimed, even good contour fillings; thought it would not do to be surprised at anything in these times.

Dr. Bogue, in reply to a question as to his observations abroad, said that in reference to cylinders, Mr. Tomes informed him that he had used them for twenty years. His method of preparing them was by simply rolling upon a small instrument. Dr. B. further said that one-half or three-fourths of the best operators in England are using cylinders at the present time.

Dr. McQuillen, in response to a call for remarks, said that in passing through the city on his way home from Boston, he had been informed that there was to be a meeting of this society, and he could

not resist the invitation to be present. He had come, however, rather to be a listener than a speaker, hoping to gain some good ideas from the experienced and practical men whom he should meet with. He had been interested in the discussion on the use of smooth-pointed instruments, but never having used them had nothing to offer on that subject. During a period of twenty-five years he had used finely-serrated points with a fair share of success in the preservation of the teeth, and he did not feel much inclined to change his mode of practice in that direction; as he feared that such an experiment might prove disadvantageous to his patients and himself. In illustration of the fact that teeth had been compactly and thoroughly filled in former days, he had been told by his friend, Prof. Shepard, that he had frequently met with teeth filled thirty and forty years ago by old practitioners of Boston, Drs. Harwood, Tucker, etc., that still remained in a good condition. He could bear the same testimony with regard to some of the practitioners of Philadelphia. He believed that there were a greater number of good operators in the country at the present time in proportion to the size of the profession than in former days; that this was largely due to the attention which had been paid to the improvements in the instruments used in operating with, and the stimulus given by the dental colleges and the clinics of the national and local societies, where opportunities are afforded of witnessing the operations of men of acknowledged skill.

Dr. Fitch said he had experimented in the use of smooth points, though he had never used the egg-shaped instruments. In the use of heavy gold he considered a smooth point, or one so filed that it would not slip, better than a serrated instrument; could finish the fillings more easily after such points. He did not know why serrations should be used with heavy gold. As to the students who are yet to enter the profession, he thought, as had been already remarked by Prof. McQuillen, it should be made obligatory for them to pass an examination; thought the community should demand this.

Dr. Gage saw Dr. Clark, of Savannah, use broken burs in packing gold. He considered them good points to commence and finish with; had since used them satisfactorily.

S. G. Perry, *Secretary.*

AMERICAN ACADEMY OF DENTAL SCIENCE.

The fourth annual meeting of the American Academy of Dental Science was held in Boston, at Christian Union Hall, 300 Washington Street, at ten o'clock A.M., Sept. 25th, 1871.

The President, Dr. Daniel Harwood, in the chair. The usual reports were read and accepted, showing the society to be in a flourishing condition.

The Censors reported the names of several gentlemen who were elected members of the Academy, viz.: Honorary Fellows—Drs. Abram Robertson, of Georgetown, Mass.; and F. P. Abbott, Berlin, Prussia. Associate Fellows—Drs. A. P. Stevens, Portsmouth, New Hampshire; and Chas. E. Francis, New York.

The following officers were chosen for the ensuing year:

President.—Daniel Harwood, M.D.

Vice-President.—E. T. Wilson, M.D.

Recording Secretary.—L. D. Shepard, D.D.S.

Corresponding Secretary.—E. N. Harris, D.D.S.

Treasurer.—E. G. Tucker, M.D.

Librarian.—John Clough, M.D.

Board of Censors.—E. G. Tucker, M.D., J. L. Williams, M.D., W. W. Codman, M.D.

At one o'clock the annual address was delivered by Prof. J. H. McQuillen, of Philadelphia. His subject was, "Dental Education." The address was a very fine production, and was delivered in an earnest and eloquent manner, eliciting the interested attention and hearty approval of the assembly.

The following is a brief synopsis of the address:

His subject was dental education, and he spoke first of the advantages of dental colleges over the old-fashioned method of private instruction. He urged very strongly the need of a thorough general education for the dentist, attributing the cause of any antagonism between dentists and general practitioners to the lack of such education, which made the former deservedly censurable. He referred to the excellence of American dental schools, saying that whereas the graduate of our medical schools goes to Europe to complete his education, our dental colleges are continually receiving pupils from Europe, and their graduates immediately take high rank in the profession. The speaker next referred to some of the faults of these institutions, especially the eagerness of the student to gain a diploma rather than to attain a thorough knowledge of the profession. He regarded the course of study as too short, and spoke against the sham colleges which bring the name of dentist into disgrace. In these schools degrees were granted without attendance at lectures in consideration of a money payment. This abuse was carried so far by the so-called Penn University in the State of Pennsylvania that an act of legislature was passed forbidding the sale of honorary degrees under penalty of fine and imprisonment. The speaker advocated a compulsory system of dental education as a requisite for practice. He would have the length of the course prescribed by law, and the examinations conducted not by the professors but by independent boards of examiners, who should be able to act more impartially. The appointment of professors, also, should be governed by strict laws. After graduating, the student should continue his education, constantly endeavoring

to make himself above all a thorough gentleman. In this subsequent education, the principle of association should play an important part, giving a stimulus to exertion and advancing individual excellence and the good of the profession. In the local societies admission at least of the younger members of the profession should depend upon a certificate of graduation from a dental or medical school.

The address was concluded by an earnest appeal to the young men of the profession to maintain its dignity and advance its interests as their predecessors had done.

At its conclusion, it was voted,—"That the thanks of the Academy be tendered to Dr. McQuillen, of Philadelphia, for his very able address, and that a copy be requested for publication and for preservation in our archives."

Essays were then read by Dr. James McManus, of Hartford, on "Dental Operations;" Dr. E. N. Harris, of Boston, on "Causes of Caries of the Teeth, and general means for Preserving the Teeth;" and Dr. L. D. Shepard, of Boston, on "The Merits of the Old and New Methods of Practice."

A vote of thanks was presented to the essayists.

At four o'clock P.M. the Academy adjourned to the Parker House, where they partook of an excellent dinner, and enjoyed therewith many pleasant and appropriate speeches from those present.

After the dinner, the members were invited to the rooms of Prof. McQuillen, who exhibited some interesting and valuable microscopic specimens.

The Academy holds regular monthly meetings in Boston, which are well attended, and the time pleasantly and profitably occupied in discussions, reading of papers, presentation of specimens of morbid anatomy, and operative and mechanical dentistry, etc.

E. N. Harris, D.D.S., *Cor. Sec.*

EASTERN OHIO DENTAL ASSOCIATION.

A report of the formation of this association, which we are informed was forwarded for publication in the Dental Cosmos, failed to reach us.

The association was organized in Canton, August 29th, and the following gentlemen were elected officers for the year:

President.—Dr. J. C. Whinery.

Vice-President.—Dr. J. W. Lyder.

Secretary.—Dr. D. B. McLain.

Treasurer.—Dr. A. J. Douds.

Committee on Eligibility for Membership.—Drs. J. H. Siddall, J. M. Porter, and C. M. Richmond.

Alliance was selected as the permanent place of meeting.

Adjourned to the last Tuesday in February.

CLINICAL REPORTS.

UNIVERSITY OF PENNSYLVANIA.

Clinic of James E. Garretson, M.D.

REPORTED BY DE FOREST WILLARD, M.D.

Erectile Tumor of Tongue.

Gentlemen,—The babe, nine months of age, now before you presents a deformity which is but seldom seen. Not but what the disease itself is common enough, and you have seen frequent operations in this amphitheatre during the past year for the removal of similar growths; but it is the position in which this tumor is found that makes the present case of particular interest.

Nævi or vascular tumors are found of all grades, from the so-called "strawberry" or "mother's marks" to those enormous and dangerous pulsatile growths, one of which was successfully removed at this clinic about a year since. (*Vide* Dental Cosmos, November, 1870.)

You will see that this tumor (which is congenital) occupies the whole of the anterior third of the tongue; that it protrudes through and fills up the oral fissure to a considerable extent; that it enlarges when the child cries; that it is of a dark red or purple color; that it is soft and fluctuating; and finally, that it can be made to disappear almost entirely by pressure upon its surface.

These characteristics are sufficient to mark it as an erectile tumor, consisting of a congeries of dilated venous radicles. Were it arterial in its character it would be of a more scarlet hue; still, both sets of vessels undoubtedly enter into its composition. I designate it as venous simply because this is the element in excess.

This growth being so large is of great discomfort to the patient; interfering with nursing, and, moreover, will be a great impediment to the speech in future, and might even deform the jaw in time. It is therefore proper to remove it, and this we shall do by the use of the ligature.

We might possibly cause a consolidation and arrest of this growth by the passage of setons; but this would not cure the deformity. Vienna paste has been recommended; but I think the tongue is an organ too highly sensitive to permit such treatment.

When any considerable portion of the tongue is to be removed, the ligature, écraseur, or knife is to be employed, the particular method of removal being adapted to the circumstances of the case.

The chief danger arises from hemorrhage, for you all know that this is an exceedingly vascular organ, receiving blood through three branches of the lingual artery, the dorsalis linguæ, sublingual, and ranine, as well as small trunks from the facial and ascending pharyngeal. These, however, can be ligated or seared with the actual cautery; still such pro-

cedure is not always required, the application of ice to the part being sufficient to contract the vessels.

When a large part of the tongue is to be removed for diseases implicating its entire substance, it will often be found more convenient and effectual to reach the base by cutting through the floor of the mouth by incisions along the base of the jaw, as recommended by Regnoli, after which the tongue can be drawn out of the opening thus made. The operation of Syme, cutting through and separating the jaw, is also sometimes useful, as is also the modification of this by Sédillot.

The tongue is so freely movable that it is customary to pass a cord through its tip before commencing any operation, in order that perfect control may be secured.

The écraseur is a very convenient instrument in many of these operations, and is safer than the knife. In extensive disease of one side, two or more of these instruments, cutting in different directions, are preferred by Chassaignac. This instrument may be used even for the posterior portion of the tongue, by carrying the chain through the floor of the mouth, as recommended by Nunneley. The cutting should never be hastened, lest the arteries have not sufficient time to contract properly.

The ligature is safe, but requires a longer time for the separation of the offending portion. Strong, double, well-twisted cord of large size should always be used, for small silk would cut the tissues, and provoke hemorrhage. When the extent to be strangulated is large, it may be divided into sections, by passing strong cords through the substance by means of needles, and then tying each part separately. The operation is somewhat painful; but this may be obviated, if thought desirable, by section of the gustatory nerve, as practiced by Hilton, opposite the molar teeth, where it passes across the upper portion of the sublingual gland and over the hyoglossus muscle, or, as by Moore, posterially to this tooth. This, of course, destroys all sensation in the tissues which it supplies.

This babe's tongue, being but small, can be ligated in its anterior third by passing a needle threaded with a double ligature through its median line and tying both sides.

[The ligatures were tightly drawn, but were not quite sufficient to cut off all circulation; and on the next day a free hemorrhage occurred from the punctured points, which was finally arrested by the application of powdered ferri subsulph., and a tighter ligature. On the fourth day, as the part had not separated, it was deemed advisable to take it away, which was accordingly done with a wire écraseur. No hemorrhage followed its use, and the parts have now healed kindly. The fænum is not destroyed, so that speech will be but little interfered with. It is surprising to what extent the tongue may be mutilated

without serious impairment of this faculty; and many instances are on record where even the entire portion has been removed and yet articulation returned quite perfectly, while deglutition was also readily accomplished. The child left the hospital at the end of the second week perfectly cured.—De F. W.]

Tongue-Tie.

Here is a boy who is unable to protrude his tongue beyond the incisor teeth, and even when he attempts this you can see that the tip is bent downward. Elevating the point, I find that the frænum linguæ is too short, constituting the deformity known as tongue-tie. This condition is congenital, which is the rule in these cases, although they may sometimes occur from the cicatrization and induration of an ulcer, either syphilitic or otherwise.

Impairment of motion may sometimes also be occasioned by a thin, whitish membrane, stretching forward from the frænum toward the extremity; but this is not vascular, and can be readily nicked.

You will frequently be called upon to operate for this difficulty by the anxious mothers of children who are a little backward in beginning to talk. They will examine this "bridle," and finding that it is not precisely like the one in their own mouths, will insist that this is the cause of difficulty. In many cases, however, this is not the case, the real cause being, perhaps, that the child, if not associated with other children or with talkative people, has not yet learned this accomplishment, and simply needs a little education.

When the operation is really required, but two things are to be guarded against, both of which may be obviated by making the incision very superficial. These are: first, hemorrhage from the ranine arteries, which here inosculate; and second, the falling back of the tongue into the fauces, endangering free respiration; this latter accident only occurring when the incision has been so free as to take away all the support afforded by this mucous fold.

It has been recommended to cut downward, toward the floor of the mouth, away from the arteries; but this will not always prevent hemorrhage, since the artery of the frænum may come up from the sublingual instead of from the ranine. All danger may, however, be avoided by using blunt-pointed scissors, and making the slightest possible nick, directly backward; a little tearing with the finger will accomplish the rest with perfect safety. Touching the raw surface with arg. nitr., and a little subsequent attention, will prevent too speedy union.

Should the operation be badly performed, and the artery cut, it may usually be secured with a ligature, unless it has retracted within its sheath, in which case the contrivance of Petit might be tried. This consists of a piece of ivory, with a short handle, pressing against the

inside of the jaw, and two prongs, which rest on either side of the frænum, holding and retaining in position a small compress wet in alum-water.

[Head grasped between the knees of the operator to prevent motion, and section performed.—De F. W.]

Syphilitic Ulcers of Tongue.

This patient is a young man who says that he has been suffering with ulcers upon the tongue and cheeks for several weeks. They look to me angry, pasty, and suspicious. I interrogate the man, and he confesses to having had a gonorrhœa a year since, but denies the existence of any chancre. He may have had, perhaps, such a sore concealed in his urethra,—the chancre larve of the French,—and not have been cognizant of its special presence, aside from the gonorrhœa. He tells us that he has had an eruption upon his skin, has lost his hair, and has had sore throat. These are sufficient to confirm our diagnosis. He has been syphilized, and, from the appearance of these ulcers, the condition of his gums, and a peculiar odor about his breath, I should say has been also mercurialized.

His blood is evidently in a depraved condition, and he needs support. I am sure none of you would think of giving him mercury. Out-door exercise, frequent salt baths, friction of the skin, attention to all the secretions, and a generous diet of beef, milk, and eggs will do much to forward this object. Then we will give him ten drops of syr. ferri. iodid. after meals, with ten grains of potas. chlor. an hour before, and at bedtime.

As a mouth-wash we will order:

℞.—Potassæ Chloratis, ℥i;
Tincturæ Cinchoniæ, f℥ss;
Aquæ, qs. ft. ℥viij.
Sig. Use thoroughly every two hours.

Touching these ulcers every fourth day with acid nitrate of mercury, diluted with three parts of water, will also hasten recovery.

NON-SERRATED PLUGGERS.

Attention is invited to the article on Smooth-faced Pluggers, which leads the advertising portion of this number, and occupies that position, according to our established rule, because it has reference to the sale of merchandise. We invite communications from those who have experience on the subject, and will publish such as shall be of sufficient interest to our readers to warrant it. *

EDITORIAL.

AID TO THE CHICAGO DENTISTS.

The following subscriptions are acknowledged in aid of the dentists who suffered by the late fire in Chicago:

Dr. J. H. McQuillen	$50	Dr. J. L. Eisenbrey	$5
" Harrison Allen	25	" C. J. Essig	5
" D. D. Smith	25	" E. H. Neall	5
" S. B. Howell	25	" W. F. Litch	5
" T. C. Stellwagen	25	" J. I. Fogg	5
" Daniel Neall	50	" Samuel Gerstel	5
" Samuel J. Dickey	25	Cash	5
" Louis Jack	25	Gabriel Ravel	2
" S. Dillingham	10	Wm. Sachs	1
" F. R. Thomas	10	H. Nicolai	1
" W. A. Breen	5	Dr. S. S. White	66
" C. W. Curtis	5		
" P. Wyman	5	Total	$400
Cash	10		

The individual subscriptions and the aggregate amount would have been much larger, if earlier intelligence had been received of the loss sustained by the profession in Chicago, as every one approached had already responded by contributing something to the general fund raised for the sufferers, in Philadelphia, and this was offered as a reason by a number who declined subscribing to this movement.

It is to be hoped that larger or smaller amounts from the profession in different cities and towns in our own and foreign countries will increase the sum, for no more fitting subject could possibly present itself for sympathy and aid than the condition of fellow-practitioners suddenly deprived of homes, instruments, materials, books, etc. No one need envy the head or heart of the man who could regard with coldness and indifference such a spectacle.

The amount collected ($400) has been placed in the hands of Dr. Samuel S. White, subject to the order of Dr. George H. Cushing, of Chicago, President of the American Dental Association.

J. H. McQ.

THE BARNUM TESTIMONIAL.

The committee appointed to receive contributions for a testimonial to Dr. S. C. Barnum, for his gift to the profession (the "rubber dam"), would respectfully urge all dentists who have not already contributed to this object, but who are willing to do so, to send at once—however small the sum—to Dr. C. E. Francis, 33 West 47th St., New York.

The names of the donors will soon be published. *

PUBLISHER'S NOTICE.

CLOSE OF THE VOLUME.

THIS number of the DENTAL COSMOS completes the Thirteenth Volume. The first number of the Fourteenth Volume will be issued January 1st, 1872. Drs. McQuillen and Ziegler retire from its editorial supervision, which will in the future be *impersonal.*

The Publisher earnestly solicits a continuance of the favors of the patrons of the magazine, both by subscription and by contributions to its pages, and also invites those of the profession who have not heretofore subscribed for it to send in their subscriptions for a single volume, confident that it will be found amply worth its cost to any one engaged in the practice of dentistry.

It is our intent and earnest desire to make the DENTAL COSMOS a practical exponent of the science and art of dentistry,—to furnish fresh and varied matter for its readers, and, through original papers, reports of societies, selections, translations, and abridgments, to supply all that the practical progress of the medical and dental professions and the arts and sciences can be made to afford. Dentistry is advancing with such wonderful rapidity; improved appliances, instruments and modes of practice are so constantly developing; new and useful views are being presented so frequently, that the wonder is that any dentist can hope to maintain his position as an intelligent practitioner who does not subscribe for and read at least one dental journal.

We shall as heretofore adhere to the system of cash payments in advance, and request those who contemplate subscribing to do so promptly, in order that we may determine the number of copies to print.

SAMUEL S. WHITE.

BIBLIOGRAPHICAL.

MECHANISM IN THOUGHT AND MORALS. AN ADDRESS DELIVERED BEFORE THE PHI BETA KAPPA SOCIETY OF HARVARD UNIVERSITY, June 29, 1871. WITH NOTES AND AFTER THOUGHTS. By OLIVER WENDELL HOLMES. Boston: James R. Osgood & Co., 1871, pp. 101.

Prof. Holmes has such a happy way of presenting his thoughts, whether in verse or in prose, in fiction or on scientific subjects, that they naturally attract attention. While the reader is pleased with the style, his mind is enlarged and improved by the matter which it adorns. Many an important physiological or other scientific fact has been *impressed* by him, through works of fiction, on the minds of those who could have been reached in no other way; and a scientific subject like the one under consideration has all the charm of what has been named the poetry of prose; at least, such was the impression made upon me in reading a newspaper report of the address which the author kindly forwarded to me a few days after its delivery. In book form it has lost none of its attractiveness, but, on the contrary, the numerous notes and other additions give it increased value.

After a characteristic and well-timed simile, in which he compares himself to a man with a lantern and a hammer, clinking the wheels of a train of cars, to try if they are sound, the author says: "I ask your attention to some considerations on the true mechanical relations of the thinking principle, and to a few hints as to the false mechanical relations which have intruded themselves into the sphere of moral self-determination.

"I call that part of mental or bodily life 'mechanical' which is independent of our volition. The beating of our hearts and the secretions of our internal organs will go on without and in spite of any voluntary effort of ours, as long as we live. Respiration is partially under our control; we can change the rate and special mode of breathing, and even hold our breath for a time, but the most determined suicide cannot strangle himself without the aid of a noose or other contrivance, which shall effect what his mere will cannot do. The flow of thought is like breathing,—essentially mechanical and necessary, but incidentally capable of being modified to a greater or less extent by conscious effort." * * *

"Whatever may be our opinions as to the relations between 'mind' and 'matter,' our observation only extends to thought and emotion as connected with the living body." * * * * * *

"If Mr. Huxley maintains that his thoughts and ours are 'the expression of molecular changes in that matter of life which is the source of our vital phenomena;' if the Rev. Prof. Houghton suggests, though in the most guarded way, that 'our successors may even dare to speculate on the changes that converted a crust of bread, or a bottle of wine, in the

brain of Swift, Moliere, or Shakspeare into the conception of the gentle Glumdalclitch, the rascally Sagnarelle, or the immortal Falstaff,'—all this need not frighten us from studying the condition of the thinking organ in connection with thought just as we study the eye in its relations to sight. * * * "The brain must be fed, or it cannot work." * * * "But so long as a sound brain is supplied with fresh blood, it perceives, thinks, wills." * * * "It is true of the brain as of other organs; it can only live by dying. We must all be born again, atom by atom, from hour to hour, or perish all at once beyond repair." * * * "Such is the aspect seen even in a brief glance of the great nervous centre. It is constantly receiving messages from the senses, and transmitting orders to the different organs by the 'up and down trains' of the nervous influence. It is traversed by continuous lines of thought linked together in sequences, which are classified under the name of 'laws of Association.' The movement of these successions of thought is so far a result of mechanism, that, though we may modify them by an exertion of the will, we cannot stop them and remain vacant of all ideas." * * * "Do we ever think, without knowing that we are thinking?" To this Descartes answers in the affirmative, and our author says, "There are thoughts that never emerge into consciousness which yet make their influence felt among the perceptible mental currents just as unseen planets sway the movements of those which are watched and mapped by the astronomer." * * * "We know very little of the contents of our minds until some sudden jar brings them to light as an earthquake that shakes down a miser's house brings out the old stockings full of gold, and all the hoards that have been hid away in holes and crannies." * * * "The more we examine the mechanism of thought, the more we shall see that the automatic, unconscious action of the mind enters largely into all its processes. Our definite ideas are stepping-stones. How we get from one idea to the other we do not know; something carries us; we do not take the step. A creating and informing spirit, which is with us, and not of us, is recognized everywhere in real and in storied life."

The preceding extracts, taken at random, will afford a general idea of the line of argument adopted by the author, but no conception can be formed of the apt illustration, the wit, humor, and broad humanity that pervade the address other than by reading it. J. H. McQ.

THE DESCENT OF MAN, AND SELECTION IN RELATION TO SEX. By CHARLES DARWIN, M.A., F.R.S., etc. With Illustrations. In two volumes. New York: D. Appleton & Co., 1871.

The writings of no man of science of the present day have commanded a larger share of general attention than those of Mr. Charles Darwin, and while no one has been more highly praised (by those who

are competent to judge of such matters) for his conscientious devotion to the cause of science, as an earnest, indefatigable, acute, and accurate investigator, so, on the other hand, no one has been so thoroughly denounced and ridiculed for the views which he has advanced in the "Origin of Species" and the "Descent of Man." Ridicule, indeed, seems to be the principal weapon relied upon to demolish the author and his works, and by some this is supposed to have been effectually accomplished. Although a useful agent in exposing the absurdities or scathing the ridiculous assumptions of an ignorant mind, it never overturned the well-grounded convictions of a great one. With thinking men ridicule can never be regarded as a substitute for argument, or as a test for truth. It is not the object, however, in this notice, to defend or assail a work which, by the combined influence of unlimited invective and unstinted praise, has become so widely known; but rather to suggest to many who are in the habit of anathematizing the author and his book without having read a single page of it, to make themselves acquainted with its contents, so that their opposition may assume more of an appearance of impartiality and justice.

In the language of the author, "The whole object of this work is to consider—firstly, whether man, like every other species, is descended from some pre-existing form; secondly, the manner of his development; and, thirdly, the value of the differences between the so called races of men." In the pursuit of this object, the homological structure, embryological development, and rudimentary organs of man, and other animals, are carefully considered, and on these facts the principle of gradual evolution is based.

As many of the statements on which Mr. Darwin rests his conclusions relate to the teeth of man and animals, it is in the power of the members of our specialty to prove or disprove their accuracy.

In illustration of this, the following extracts are presented for the consideration of the readers of the Dental Cosmos:

"Rudimentary organs must be distinguished from those that are nascent; though in some cases the distinction is not easy. The former are either absolutely useless, such as the mammæ of male quadrupeds, or the incisor teeth of ruminants, which never cut through the gums; or they are of such slight service to their present possessors, that we cannot suppose that they were developed under the conditions which now exist." (Page 17, vol. i.)

"It appears as if the posterior molar or wisdom teeth were tending to become rudimentary in the more civilized races of man. These teeth are rather smaller than the other molars, as is likewise the case with the corresponding teeth in the chimpanzee and orang; and they have only two separate fangs. They do not cut through the gums till about the seventeenth year, and I am assured by dentists that they are much more liable to decay, and are earlier lost, than the other teeth. It is also remarkable that they are much more liable to vary both in structure

and in the period of their development than the other teeth. In the Melanian races, on the other hand, the wisdom teeth are usually furnished with three separate fangs, and are generally sound: they also differ from the other molars in size less than in the Caucasian races. Prof. Schaaffhausen accounts for this difference between 'the races by the posterior dental portion of the jaw being always shortened' in those that are civilized, and this shortening may, I presume, be safely attributed to civilized men habitually feeding on soft, cooked food, and thus using their jaws less. I am informed by Mr. Brace that it is becoming quite a common practice in the United States to remove some of the molar teeth of children, as the jaw does not grow large enough for the perfect development of normal number." (Pages 25 and 26, vol. i.)

"It is manifest that man is now subject to much variability. No two individuals of the same race are quite alike. We may compare millions of faces, and each will be distinct. There is an equally great amount of diversity in the proportions and dimensions of the various parts of the body; the length of the legs being one of the most variable points. Although in some quarters of the world an elongated skull, and in other quarters a short skull, prevails, yet there is great diversity of shape even within the limits of the same race, as with the aborigines of America and South Australia,—the latter race 'probably as pure and homogeneous in blood, customs, and language as any in existence,'—and even with the inhabitants of so confined an area as the Sandwich Islands. An eminent dentist assures me that there is nearly as much diversity in the teeth as in the features" (Page 104, vol. i.)

"We have thus far endeavored rudely to trace the genealogy of the Vertebrata by the aid of their mutual affinities. We will now look to man as he exists, and shall, I think, be able partially to restore during successive periods, but not in due order of time, the structure of our early progenitors. This can be effected by means of the rudiments which man still retains, by the characters which occasionally make their appearance in him through reversion, and by the aid of the principles of morphology. . . . The foot, judging from the condition of the great-toe in the fœtus, was then prehensile; and our progenitors, no doubt, were arborial in their habits, frequenting some warm, forest-clad land. The males were provided with great canine teeth, which served them as formidable weapons." (Page 198, vol. i.)

"Male animals already provided with efficient cutting or tearing teeth for the ordinary purposes of life, as in the carnivora, insectivora, and rodents, are seldom furnished with weapons especially adapted for fighting with their rivals. The case is very different with the males of many other animals. We see this in the horns of stags and of certain kinds of antelopes, in which the females are hornless. With many animals the canine teeth in the upper or lower jaw, or in both, are much larger in the males than in the females; or are absent in the latter, with the exception sometimes of a hidden rudiment. Certain antelopes, the musk-deer, camel, horse, boar, various apes, seals, and the walrus, offer instances of these several cases. In the females of the walrus the tusks are sometimes quite absent. In the male elephant of India and in the male dugong the upper incisors form offensive weapons. In the male narwhal one alone of the upper teeth is developed into the well-known, spirally-twisted, so-called horn, which is sometimes from nine to ten

feet in length. It is believed that the males use these horns for fighting together; for 'an unbroken one can rarely be got, and occasionally one may be found with the point of another jammed into the broken place.' The tooth on the opposite side of the head in the male consists of a rudiment about ten inches in length, which is imbedded in the jaw. It is not, however, very uncommon to find double-horned male narwhals, in which both teeth are rudimentary. The male cachalot has a larger head than that of the female, and it no doubt aids these animals in their aquatic battles. Lastly, the adult male ornithorhynchus is provided with a remarkable apparatus, namely, a spur on the foreleg, closely resembling the poison-fang of a venomous snake; its use is not known, but we may suspect that it serves as a weapon of offense. It is represented by a mere rudiment in the female. (Page 230, vol. ii.)

"Other similar facts could be given; but even if we had no evidence on this head, we might feel almost sure, from the analogy of the higher Quadrumana, that the law of battle had prevailed with man during the earlier stages of his development. The occasional appearance at the present day of canine teeth which project above the others, with traces of diastema, or open spaces, for the reception of the opposite canines, is, in all probability, a case of reversion to a former state, when the progenitors of man were provided with these weapons, like so many existing Quadrumana. It was remarked in a former chapter that as man gradually became erect, and continually used his hands and arms for fighting with sticks and stones, as well as for the other purposes of life, he would have used his jaws and teeth less and less. The jaws, together with their muscles, would then have become reduced through disuse, as would the teeth, through the not well-understood principles of correlation and the economy of growth, for we everywhere see that parts which are no longer of service are reduced in size. By such steps the original inequality between the jaws and teeth in the two sexes of mankind would ultimately have been quite obliterated. The case is almost parallel with that of many male Ruminants, in which the canine teeth have been reduced to mere rudiments, or have disappeared, apparently in consequence of the development of horns. As the prodigious difference between the skulls of the two sexes in the Gorilla and Orang stands in close relation with the development of the immense canine teeth in the males, we may infer that the reduction of the jaws and teeth in the early male progenitors of man led to a most striking and favorable change in his appearance." (Page 310, vol. ii.)

Although the conclusions arrived at by the author may not be flattering to the vanity of man, who prides himself upon the nobility of his origin, and instinctively opposes everything that tends to subvert that belief, yet any doctrine, however startling, that is broached by an honest and learned man, is deserving of patient and impartial investigation. It cannot be safely refused a hearing, nor be dismissed with sarcasm. A laugh is no argument, nor is a jest a refutation of one. The greatest discoveries have been the subject of the keenest satire. Above all, it should be remembered that the right to seek after truth, even though it should lead to a conflict with long-cherished opinions, is the highest prerogative of man.

J. H. McQ.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEORGE J. ZIEGLER, M.D.

VALEDICTORY.

Our editorial connection with the DENTAL COSMOS closes with this number. With the facilities afforded by the publisher, we have faithfully endeavored to enlarge the knowledge and promote the best interests of the specialty of dentistry. To what extent we have aided in bringing it to its present advanced position it is not for us to estimate, but to rest with the assurance that, in common with all other things, the Infinite will rightly judge, as He only can determine the true value of human effort.

We wish the journal every success, and believe it will be eminently useful under its new management. We shall concentrate our editorial labors upon a periodical devoted to general medicine, and hope to make it a medium of much good to all branches of the profession and the world at large.—G. J. Z.

Anæsthesia—Its Discoverer, Horace Wells.—The *Lancet* says: "A movement has been inaugurated by the well-known dentist, Mr. C. J. Fox, to provide an annuity for the widow of the late Horace Wells, of Hartford, U.S.A., the originator of modern anæsthesia. It is only natural that the dental profession, whose members have now, after a quarter of a century's disuse, returned to the daily employment of the original anæsthetic, nitrous oxide, should have had their attention directed to the original discoverer of the use of the gas for dental purposes. Wells was indubitably the first to put in practice the suggestion of Sir Humphry Davy that nitrous oxide might be employed as an anæsthetic, and it was after attending an exhibition of the effects of the 'laughing gas,' on December 18th, 1844, that he formed an opinion respecting its anæsthetic uses, which he proved in his own person the next day. The failure of the gas on one or two occasions, from causes now readily intelligible, the introduction of sulphuric ether by Morton and Jackson, and the subsequent discovery of chloroform by Sir James Simpson, completely overshadowed the original merits of Horace Wells, who, disappointed and ruined, perished by his own hand. Those who are interested in the subject will find the full historical details in a work by the Hon. Truman Smith, called 'An Inquiry into the Origin of Modern Anæsthetics,' which was reviewed in *The Lancet* of May 7th, 1859, and from which copious extracts are given in the *British Journal of Dental Science* of the current month.

"We understand that Mrs. Wells is in great need, and we think that both members of the dental profession and their patients may well be called upon to contribute their mite towards the fund now in course of formation. Mr. J. T. Clover and Mr. F. W. Braine, both of whom are

well known as having had much to do with the administration of anæsthetics, have consented to act as treasurers of the fund."

We most heartily concur in this movement for the benefit of the family of the late Horace Wells, who bestowed untold blessings upon the human race by his discovery of anæsthesia. In our work on Nitrous Oxide, published in 1865, but now out of print, we invited attention to this subject in the following words: "While Sir Humphry Davy is clearly entitled to the credit of having first observed the anæsthetic properties of nitrous oxide, and suggested its application for the relief of pain in surgical operations, to Dr. Horace Wells is unquestionably due the immortal honor of having made the first practical demonstration of anæsthesia by means of this agent, its primary selection for the purpose being apparently more the result of accident than design. . . . . . This great discovery was thus the direct product of preconceived thought and intelligent research on the part of Dr. Wells, to whom the world is thereby so largely indebted that it cannot by any posthumous honors do more than acknowledge its obligations for benefits conferred, yet may, to some extent, manifest its gratitude by an ample endowment for the support of his bereaved and indigent family, which it is hoped will be speedily done."

It is too often the case that the pioneers of thought and discovery are the martyrs of humanity, neglected or abused while living, and honored when dead with the hollow mockery of monuments, of little practical value to any one, much less the bereaved family, so frequently left to suffer penury and want. This ought not to be, for, in the natural order of things in the progress of knowledge, it must necessarily be the case that some members of the human family should be in the advance as pioneers; but while acting thus as guides for the mass of mankind, they should rather be aided and supported than opposed and persecuted in the slightest degree, much less to such an extent as to be driven to a violent, or forced to an otherwise premature death.

As it is the duty, it should be the object of every one to *en*courage rather than *dis*courage investigation in all directions leading to a better knowledge of truth, and the obloquy should be upon those who obstruct, rather than those who seek to promote advancement. Hence human aspiration and effort for progress should be freely fostered, and every facility afforded to realize all possible benefit from the working of each individual member of the body politic, while encouragement should be extended to even the apparent fancies of so-called enthusiasts, who are, in fact, the potential agents of progressive research, and the essential, if not always the immediate, exponents of discovery; for the progress of improvement plainly shows that the dreams of one period are truly the realities of another, while the difference of time between the conception and the realization of thought is often so wonderfully short that it should

impress every one with the importance of investigation of both abstract and concrete truth. But as the world goes, it is evident that a much more practical Christianity and a higher civilization are required than exist at present, to tolerate the broad liberality necessary for the untrammeled thought and action of all mankind for true progress. If from no other than the baser motive of self-interest, society should stimulate every one to perfect improvements of all kinds; for at the best, the largest emolument accruing to the most fortunate of discoverers is but a trifle, lasting for a short lifetime of, at the farthest, a few individuals, in comparison with the great benefit conferred upon the world at large and continuing for all time. Without regard to higher considerations, it is better, then, to cherish than crucify these pioneers of progress,—the best of our race,—and to take advantage of their peculiar talents, which always tend to the greater good of their fellow-beings than of themselves. Hence all seekers of truth should be regarded as inchoate public benefactors, and be practically encouraged, to better enable them to perfect discovery and provide for those dependent upon them, instead of being sacrificed, and too often obliged to leave families dependent upon the cold charities of the world for a precarious subsistence, when they are justly entitled to a rich return for the good effected, while in all cases those thus unfortunately left should be properly cared for as the wards of those more immediately benefited.—Z.

Anomalies of Dentition.—Prof. Richard Owen, LL.D., A.M., of the Indiana State University (*Sci. Amer.* and *Phrenological Jour.*), stated "that the intermarriage of blood relations is a physiological error, and he might almost say, with our knowledge of such matters, a crime. Speaking from a close observation of this subject for many years of all the families of his acquaintance where close intermarriage had been permitted, the children were either deaf mutes or were afflicted by some deficiency. He knew a young man whose father was a physician, and who should have known better than to marry a double cousin, but the consequence was, as the last portion of the osseous system developed, the young man, from the intermarriage of those in whom the same material was deficient, was prevented from having a tooth at any period. His sister had but two or three small stubs of teeth, and their brother was altogether deficient in his mental faculty. He insisted that it was a great crime for parents to allow their children to grow up with the idea that they might ever intermarry with blood relations. It should be a thing never to be thought of, the intermarriage with those connected by ties of consanguinity.

"Mr. Ferguson knew of a case in Ohio where some thirty families had married and intermarried until they could no longer tell their relationship. Most of the progeny were deaf mutes, and the remainder but a little above idiotic."

Anomalies of Dentition.—In an instructive address on the Laws of Organic Development, to the Amer. Assoc. for the Advancement of

Science (*Amer. Naturalist*), Prof. E. D. Cope observes: "Structural characters are known in many, if not all, species which are said to be 'inconstant,' being present or absent indifferently, thus being useless for definition. They may be rudimental when present or considerably developed. The presence or absence of wings in some species of insects may be cited; also the presence of generic characters in the male sex of many Coleoptera and their absence in the females. The characters of males, females, workers and soldiers in bees and ants may be added. All these facts belong to the same category as those cited among deer and mollusks and have a similar explanation.

"It does not seem to be the law in 'retardation' that parallelisms exhibited by the series in its rise to its highest point of developement should retrace the steps by which it attained it, and that 'exact parallelisms' should be exhibited in a reversed order. Parallelisms, it is true, are exhibited; but so far as I have observed always 'inexact,' often in a high degree. A marked case of retardation occurs in the dental devolopment of a number of persons who have come under my observation in the neighborhood of Philadelphia. It is not very uncommon to find persons in whom the third molars in both jaws are incomplete as to number, one, two, three, or all, being deficient. It is still more common for them to be incompletely covered by the enamel layer, and to become in consequence so worthless as to require early removal. I am acquainted with two families in which the absence of the exterior upper incisor on each side is common. In one of these the second and third generation have inherited it from the mother's side, and it now characterizes many of the children. The significance of this modification will be best understood by examining the dental structures of the *Quadrumana* in general. Commencing with the highest family and the modification, we have:

		Incisors.	Canines.	Premolars.	Molars.
Hominidæ	Abnormal...	$\frac{1}{2}$	$\frac{1}{1}$	$\frac{2}{2}$	$\frac{2}{3}$
	Normal......	$\frac{2}{2}$	$\frac{1}{1}$	$\frac{2}{2}$	$\frac{3}{3}$
Simiadæ...........................		$\frac{2}{2}$	$\frac{1}{1}$	$\frac{2}{2}$	$\frac{3}{3}$
Cebidæ.............................		$\frac{2}{2}$	$\frac{1}{1}$	$\frac{3}{3}$	$\frac{3}{3}$
Lemuridæ..........................		$\frac{2}{3}-\frac{3}{3}$	$\frac{1}{1}$	$\frac{3}{3}-\frac{2}{3}$	$\frac{3}{3}$
Mammalia, Normal..............		$\frac{3}{3}$	$\frac{1}{1}$	$\frac{4}{4}$	$\frac{3}{3}$

"In this table we see a decline in the number of teeth of the higher groups. Thus the premolars are one less than the nominal number in the whole order, and they lose one in each jaw in the Old World apes, and man. The molars maintain the normal number throughout, but the third in both jaws is in the *Simiadæ* reduced by the loss of a fifth or odd tubercle, thus becoming four-lobed. In the upper jaw this is first lost in the Semnopithecus; in the lower, in the next highest genus, Cercopithecus. In Homo its appearance is 'retarded,' the interval between that event and the protrusion of the second molar—six to ten years—being relatively greater than in any genus of *Quadrumana.* Its absence is then the result of continued retardation, not of a new and adaptive suppression, and is of direct systematic zoological value.

"In the incisors a reduction is also plainly visible, as we pass from the most completely furnished *Lemuridæ* to the genus Homo. One from the upper jaw is first lost, then in the *Cebidæ,* one from the lower also. The number remains the same through the *Simiadæ* and normal *Hominidæ,* but in the abnormal cases cited the process of reduction is con-

tinued and another incisor from each side disappears. That this also is truly 'retardation' is also evident from the fact that the exterior incisor is the last developed, being delayed in ordinary growth a year later than those of the inner pair. The same retardation is seen in the quadrumane *Cheiromys* (the *Aye-aye*), and the whole order *Rodentia*. In the latter, the rare presence of the reduced second incisors shows that here also the external incisors are lost. This retardation is also of systematic importance, and, should either of the characters described be constant in any of the species of the genus *Homo*, would at once entitle it to new generic rank. The very frequent absence of the posterior molars (wisdom teeth) has been recently found to characterize a race in India. Should this peculiarity prove constant, this race would with propriety be referred to as a new genus of *Hominidæ*, as we have many cases of very similar species being referable to different genera. It is altogether probable that such will, at some future time, be the condition of some race or races of men."

"*Bone-Builders.*—A distinguished physician of this country has remarked, in effect, that if you want your children to grow up to a well-developed, vigorous, and healthful manhood and womanhood, you must attend especially to the *bone-building* during the period of growth. The fat and flesh can be put on afterward, but not the hundredth part of an inch can the bones be made to take on after the season of growth has once come to an end.

"Beans, barley, and oatmeal have about three times more of the bone-building and teeth-feeding elements than the best beefsteak, and as the last named of the three is generally the best liked, it is especially excellent to give to children. Let the Canadian oats be selected, well cleaned by the smut machine, ground coarse, and then not boiled so long as to destroy the distinct grains, or to transform it to a starchy mass. Then let it be eaten warm with milk, a little granulated sugar added, and we venture to say it will become a daily favorite in any household where it is tried; and any family will find themselves a thousandfold compensated for the experiment by the better development and better health of the children, and an improvement in all."—(*Ch. Union* and *Amer. Eclectic Med. Rev.*)

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*Dentigerous Cysts—Clinical History.** Extracts from Prize Essay. By W. S. Bolles, M.D. (*Boston Med. and Surg. Journal*).—"This is perhaps the most neglected part in the recorded cases; many entirely fail to give the history of the case. Where it is given, it seems to be simple and easily told: a slow, nearly painless swelling of a portion of the jaw appears and increases, and a certain irregularity (to be referred to again) is noticed in dentition. What distress there is—usually slight, often none—is due to the tension and mechanical inconvenience of the new growth. In most cases this is all. The growth may be uniform and steady, or its progress may be retarded and again

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* While the opinions of authors have been freely used in the following paragraphs, more weight has been given to the teachings of the cases themselves. On this account some of the following statements will be found different from the usual accounts, but a reference to the table* will sustain them.

* Omitted.—Z.

make fresh advances. It never diminishes. It may open in the mouth or through the cheek, causing either a permanent fistula, or it may close and open alternately. The wall of the antrum is usually compressed, rather than broken through; but this accident undoubtedly happens, and it often is impossible at the time of operation to say whether the cavity opened is the antrum or separate from it. Inflammation and suppuration often occur, but are not peculiar to dentigerous cysts. Such cases are apt to be painful. The size of the cavity varies from that of an orange, down.

"The liability to cancerous degeneration is not so much feared now as formerly, but that a fibrous growth occasionally follows has been observed in certain cases of cysts; it is doubtful, however, if such cases were actually dentigerous cysts.*

"There are certain cases accompanied by a considerable amount of pain, either from the very first, or coming on after a little, and lasting until interfered with. These either arise from a blow or injury, in cases where the errant tooth is pushing away obstructions to its progress, or such as are accompanied by some less usual complication.

"The diagnosis requires, first, the recognition of a hollow growth, and secondly, the knowledge that it contains a tooth. The first is accomplished by physical examination, and would seem easy enough; yet a large proportion of the cases of removal of the bones for this disease were done through a mistake on this very point. The history of the case is not essential to this examination; yet an account of much pain, or cancerous tendency, would, of course, receive attention. An irregularity of its surface, polypi of the nose or pharynx, or a fungous appearance, are indicative of a solid tumor. A painless swelling of either jaw, of not very rapid growth, should always suggest the possibility of a cyst, and lead to a careful examination of every part of its surface, both over *the cheek and within the mouth.*† Fluctuation will usually be detected in certain places at least, although the greater portion may be bony and unyielding.‡ If these thinner spots be indented, perhaps they will return to their places with a crumpling sound which is pathognomonic of a cystic growth; if any doubt remain, an exploratory puncture, which is perfectly harmless, should always be made, as Dupuytren has well insisted.

"The elimination of fluid accumulations in the antrum, old alveolar abscess or cysts containing blood, serum, or other matter, but not teeth, is more difficult. A decision from the above evidence alone would be impossible. There is one diagnostic mark, however, for these cases,

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* The prognosis, says Mr. Syme, is more favorable if a tooth be found in the cyst; it is then almost certain that it will contract and heal. This may occur in other cases, but it has been noticed that cysts, after being opened, are not unfrequently followed by the formation of a solid tumor. I could mention to you cases where I have opened cysts *containing nothing but serum*, in the place of which solid tumors have afterwards been formed.—(*Lancet*, March 10th, 1855, p. 253.)

† They are generally at some parts as hard and as unyielding as the bone, so that if the examination be limited to these the mass will be supposed to be solid."—Syme, op. cit., p. 253.

‡ Judging from the *non-ossification of the old "gubernaculum"* and the cases which I have seen, I shall venture to say that that portion of the wall under the gum where the *missing tooth should normally have appeared* will always be found *membranous or else very thin.*

which is of the highest value when it can be proved: this is *the absence of a permanent tooth* (which has never been removed) *some time after its appearance is due, in the neighborhood of the cyst, and whose place is quite likely to be filled by its temporary predecessor.* This condition in the mouth, in connection with the swelling, would be an almost positive indication of its nature. While, on the other hand, if all the teeth are present and normal, it is one of the other diseases.*

"The predisposing and the exciting causes of this affection should be separately studied. The presence of a tooth in the jaw which has never erupted is, in fact, the only one cause of the disease, since youth and other conditions which have been considered as such are only accidental. The teeth concerned are of a permanent set† and usually delayed in the jaw, either in consequence of the irregular or non-development of their fangs, their deep situation, or wrong direction, or else of the obstinate persistence of the temporary teeth in advance of them.

"The exciting causes are often unknown and probably various. The attempts of the impacted teeth to reach the surface have an exciting action in certain cases; but on the other hand such teeth may lie quiet in the jaw during the entire life, and cause no trouble, or may be found inclosed in a cyst after all attempts at growth had been given up for years. That the disease should follow the extraction or aching of carious teeth, is not remarkable, considering how common these are at all ages; yet such irritation in some cases may have been the exciting cause as well as the obstinate resistance of a milk tooth to the advance of its follower. In the first and second cases given in the tables the disease was evidently excited by the blows which preceded. The additional presence of undeveloped teeth in the jaw is, of course, essential in all these cases, for without these the affection *cannot exist.*

"Whatever may have been the exciting cause, the pathology is essentially the same. The disease is due to a morbid secretion into and enlargement of the capsule of the enamel organ of the unfortunate tooth. This is shown by the position of the latter, whose crown lies exposed in, and to a certain degree faces the cavity. This position serves to distinguish this cyst from those instances where innocent teeth, before eruption, have become displaced by the growth of solid or even fluid tumors in which their own enamel organs bore no part, or other cavities which simulate it, but are as distinct from it as hydrocele from scrotal abscess. *If the fang instead of the crown project, it is not a true dentigerous cyst.*‡

"Probably the reticular parenchyma of the enamel organ is destroyed by its expansion, but in the multilocular forms this may possibly aid in forming the partitions. The whole inclosure is lined with a serous membrane, which is sometimes considerably thickened and vascular,

* Rare exceptions may occur to both these statements. Teeth may be indefinitely impacted or undeveloped, and yet produce no disturbance, or may be absent altogether,—the missing member never having had an existence,—or they may be the innocent participants of an independent growth, as where they become involved in solid tumors. A supernumerary and a temporary tooth have each been found at fault. (Appendix, Nos. 16 and 20.)

† One exception, No. 16.

‡ When, as is common, several teeth are inclosed in the same cyst, usually one is the *cause* of the trouble and the others are *sufferers by it*, and as unconnected with it, as in the cases just mentioned. Thus, in Case No. 27, the second molar was the victim and the third the cause of the tumor.

and continuous over the crown of the tooth, as would be expected from its origin. A microscopical examination of such specimens would be very interesting; it should show an absence of the 'cuticula dentis' from the tooth and the continuousness of its covering, the enamel membrane, with the rest of the wall. The fluid is usually serous, but may be purulent,—contain cholesterin, flakes of lymph, or shiny matter, or vary in other respects. A bony exostosis in one case accompanied the cyst, and may have been the exciting cause of it. Other complications have occurred.

"The prognosis, without treatment, may be inferred from the preceding pages. The influence of surgical interference will be seen from the following:

"The aim of treatment should be to thoroughly expose the inside of the cyst to the air, to save the jaw, if possible, and to leave as little disfigurement of the face as can be done. The cyst must be opened widely; no mere puncture is of any avail. A small hole will close before the secreting power is destroyed, and the disease will scarcely be retarded by the operation. In almost all instances the opening can be made with perfect ease within the mouth, and no scar left to reflect discredit upon the surgeon. This is especially desirable if the patient be a female. The proper place for incision, particularly in the lower jaw, where cysts always expand at the expense of its outer surface, will be found just outside of and parallel with the line of the teeth, but of course must be varied according to the indications of each case. Extracting a tooth and puncturing through its socket, as sometimes recommended in disease of the antrum, is inferior to the course just described, unless the cavity be small, or from the details of the case it is thought that its tooth can also be removed through the socket, or that it will take its place in the mouth by this means, when of course it is to be preferred. It is well, if the disease is extensive, to cut away a portion of its wall. By so doing its closing is prevented, the exposure more complete, and the application of dressings facilitated.

"Many cases will get well by this treatment, without further attention; it is better, however, to fill the wound with lint or charpie, which will serve both to keep it open and maintain the desired irritation of the sac. The lint may be soaked with some stimulating wash with advantage in tedious cases, or tinct. iodinii may be repeatedly painted or injected in addition. Dr. Warren insists, too, upon crushing together the walls at the time of operation; a practice which is certainly rational, and would also aid in causing suppuration of the cyst. Attempts to scrape out the lining membrane have been made, but with indifferent success. Methodical compression is recommended by several authors, with a view to promoting the cure and facilitating the return of the jaw to its original shape. It is usually not needed, however, as the tendency of parts to return to their normal forms after the disease which distorted them has been removed is sufficient in these cases. The pressure, too, must be disagreeable to the patient, and its actual effect very small. Some slight thickening or change of the bone almost always remains.

"It has always been advised that the encysted tooth should be removed, but while generally desirable this is not essential, and in such cases as Nos. 4 and 26 of the table should by no means be done. Any persisting milk tooth in the neighborhood of one of these tumors should be at once drawn.

"If one operation do not effect the cure, let it be repeated, using every care that all the steps of it be *thoroughly* done.

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"In the course of healing the growth gradually shrinks, and the sac fills with granulations, the bone resumes nearly its original shape and size, the cavity is obliterated, and only a slight thickening remains. When the disease is very extensive, especially if its cavity be multiple or has repeatedly resisted the milder treatment, the removal of the affected part of the bone may be required. But it should be confessed that in many of the cases where the bone has been removed it has been done through an error in diagnosis. In one case, after the incisions for removal had been made, the surgeon, discovering with what he was dealing, abandoned his purpose and saved the jaw.

"The details of the operation are not essential here, as they may be found in any work on surgery. In Case 29 two precautions were taken not usually mentioned, which, with the neatness with which it was done, and its perfect success, make it a model to be followed when extirpation is needed. The external incision was made from the angle of the mouth *downwards* and backwards to a point nearly an inch and a half below the lobule of the ear; thus entirely avoiding division of the facial nerve and the consequent paralysis of the face. By this means, too, the most perfect drainage is obtained, if needed, for, as the patient lies in bed, the direction of the cut is exactly vertical. Most of the periosteum was saved in the cases in question, and no vessel of any size cut but the facial and inferior dental. The bone was cut through the socket of the left lateral incisor, and the left side disarticulated.

"The maintenance of the chin, undisturbed, is important, both with a view to preserving the features and of not impairing the tongue by cutting its anterior attachments. Of course as little of the bone as possible should always be taken. This remark applies to the upper as well as the lower jaw, but in the upper the saving of the periosteum is less important, since its reproductive power is much less than that of the other.

"The deformity produced by operation on either jaw is remarkably small. The whole superior maxilla may be removed, and yet be scarcely missed, as is shown by the pictures of such cases, and in the instance just described, of operation on the lower jaw, the symmetry of the face was but little disturbed. In the lower jaw a stout fibrous or even bony cord will fill the vacant place, and enable the remaining part to perform tolerably well its duty, and even permit the patient to chew meat.* The recovery from the operation of removal is usually more rapid than that after the more conservative ones.

"In the Appendix will be found a synopsis of all the authentic cases accessible to the writer, with the sources whence obtained. At first a much larger list was made, and included many which were probably dentigerous, but where no mention is made of the teeth inclosed, the non-removal of the tumor making an accurate examination impossible.† These so much marred the accuracy of the table that they are now

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* Stanley says the utmost extent of the reproductive power is the "fibro-cellular" cord firmly connecting the ends.—*Diseases of Bones*, p. 277.

† The teeth are sometimes altered in shape, and often so little projecting as to be easily overlooked. In one specimen they were not discovered until it had passed through several able hands, and in another not for many years.

omitted, and none were retained but those expressly stated to contain teeth. There are one or two others which have not been included, because related with so few details as to be of no use.

"The whole number of instances is too small for much generalization, but two or three facts are worth noting:—The sexes seem nearly equally liable (male 11, female 12). The number of upper and lower teeth affected is also equal. Most of the instances have occurred between the ages of 10 and 40,—1 to 10, one case;* 10 to 20, nine; 20 to 30, nine; 30 to 40, three; 40 to 50, none; 50 to 70, three. Their duration has been between four months and thirty years. The above list of ages is at the time of operation.

"Contrary to the usual statement, but as might be expected from their position in the jaw, the lower third molars are the teeth most frequently encysted, and second to these come the upper canines.

	Upper.	Lower.
Central incisors	1	0
Lateral incisors	3	0
Canine	4	3
1st premolar	0	0
2d premolar	1	3
1st molar	2	0
2d molar	2	2
3d molar	0	7

Supernumerary, 1; temporary molar, 1; 'molar' (not stated), 2."

"*Accidents caused by extracting Teeth.*—Dr. Delestre, in the *Gazette Méd. de Paris*, gives an account of the numerous accidents caused by extraction of teeth. He classifies them as follows: 1. Those referable to the tooth itself, or the neighboring teeth: fracture of the teeth; luxation and fracture of the neighboring teeth; extraction of the germ of the second dentition. 2. Those that affect the maxillary bones: fracture of the alveolar edge, and complete fracture; luxation of the jaw; lesion of the maxillary sinus. 3. Those affecting the soft parts: tearing and stripping up of the gums; contusion and wounds of the lips; of the cheeks and tongue; emphysema. 4. Secondary accidents: hemorrhages, fluxes, phlegmons, and abscesses; teeth entering the digestive and respiratory passages. 5. Sympathetic affections: neuralgia, tetanus, accidents affecting the organs of sense; accidents to pregnant or to nursing women, and at the menstrual epochs. We will notice particularly only the disturbances of vision, consequent upon changes in the teeth, and operations on those organs. This question has already been studied by Delestre in a memoir presented to the Academy (session of February 17th, 1869). He reports several observations which tend to prove the existence of visual troubles from this cause; he calls attention to the fact that odontalgia is accompanied frequently by a flow of tears and redness of the conjunctiva, with pain, and winking of the lids. In this case there is, in the first place, an excitation of the nervous filament belonging to the diseased tooth (branch either of the superior maxillary or inferior maxillary nerve); this irritation of one part of the trifacial nerve is transmitted to other parts, and particularly to the ophthalmic branch of Willis; hence flow of tears, redness of conjunctiva, etc. Herman Schmidt explains the passing disturbances of accommodation,

* And this is probably an error. See above.

which accompany the pains in the teeth, on the same side, by the increase of the intraocular pressure resulting from a reflex irritation of the vaso-motor nerves of the eye."—(*N. York Med. Jour.*)

Harelip. Operation by Sir Wm. Fergusson.—"This was performed by paring the edges of the gap, sparingly above and freely at the lip, by a stroke of the knife on either side. The edges of the wound having been transfixed by two pins, and secured with a silk suture applied in a figure-of-8, the lip was painted with collodion.

"Sir Wm. Fergusson expressed his surprise that the old legend, that operations for harelip should not be performed until after the completion of the first dentition, should still retain so firm a hold on many minds, in spite of the overwhelming testimony, afforded by modern surgery, of the advantages of operating between the third and sixth weeks of life."—(*Lancet.*)

Cleft Palate closed by Operation—"*Cleft of the Soft Palate; Staphyloraphy, under Chloroform, with Smith's Gag.*—A little girl, two years and a half old, was operated on, under the influence of chloroform, by Mr. Hulke, with the aid of Smith's gag. The levatores palati were divided after Fergusson's method. There was but little bleeding, and no sickness. For about a week the case did well; and then, in a fit of coughing, the sutures were torn out, and the cleft was reopened. Thirteen months after the first operation, Mr. Hulke operated again; using, on this occasion, silkworm-gut sutures instead of the ordinary ones of spun silk. On the fourteenth day two of the stitches, and on the nineteenth the remaining ones, were removed. There was perfect union throughout the entire length of the cleft.

"*Cleft in the Soft and Hard Palates; Staphyloraphy after Sir. W. Fergusson's Method, and Uranoplasty after Langenbeck's.*—A girl seventeen years of age was admitted with a cleft dividing the velum and also the hard palate as far forward as the position of the incisive foramen. The maximum breadth of the cleft in the hard palate was half an inch, and the sides rose steeply from the alveolar border. For a few days the patient tickled the roof of her mouth with a feather, with the result of greatly diminishing its sensitiveness. Mr. Hulke united the halves of the velum by staphyloraphy. The great self-control of the patient enabled him to complete the operation in much less time than it usually occupies. The hinder part united immediately; but the front stiches were dragged out, and at this part a slight ulceration arose, which soon healed without doing much damage. Four months later Mr. Hulke closed the cleft in the hard palate, detaching the periosteum with the mucous membrane from the bones, as recommended by Langenbeck, by means of elevators, and separating the upper border of the velum from the posterior margin of the palatine process of the palatine bone. The flaps so made came readily together, and perfect union resulted, excepting at one point where a minute capillary aperture remained. When recently seen (two months after the second operation), the voice had greatly improved."—(*Lancet.*)

Epitheliomata of the Lip. Removal by Mr. Holden.—"The patient was sixty-two years of age, and had enjoyed eighteen years of immunity after the removal of a former growth. He presented the unusual feature of two distinct epithelial growths, one situated at either end of

the lower lip; that at the left extremity being rather more advanced than the other. Mr. Holden decided to remove it the first, reserving the other for a subsequent operation. It appears that neither of these growths made its appearance in the site of the one removed some years ago."—(*Ibid.*)

"*Chronic Facial Neuralgia.*—B., an Englishman, aged forty-six, has suffered with facial neuralgia for the past eight years. It is paroxysmal, coming on at irregular times, and at all hours of day and night. Now he is so that he does not wash his face with water, nor take either hot or cold drinks at his meals. He has had all of the upper teeth on one side extracted, and the infraorbital nerve cut, and has taken medicine from several physicians, but without any relief.

"Coming to me, I gave him first one medicine, then another, until I had exhausted my Materia Medica. Thinking possibly there might be a ganglion formed on some of the dental nerves, I made a free incision down to the alveolus along the entire right side of the jaw, and removed with cutting pliers all the alveolus not absorbed. In a few weeks cut down and removed a full half-inch of the infraorbital nerve. Not even temporary benefit from anything I did, either medical or surgical, and after an eighteen months' trial I quit in disgust. Some ten months afterwards, and after quitting all treatment, the pain ceased, and has not since recurred, eight years having elapsed. If it had stopped whilst I was giving him medicine, or after either of the operations, I would have received the credit."—(*Eclectic Med. Jour.*)

"*Electricity in Tic-douloureux and Hemicrania.*—Dr. Berger reports twenty-five cases of tic-douloureux treated with the galvanic current—the positive pole wet and applied to the affected parts, the negative on the knee or in the hand. But when the pain was only at one point, the headed electrode was employed. The current was moderate, lasting five to eight minutes daily. After ten to twenty sittings, twenty-two cases cured."—(*Indiana Jour. of Med.* and *Georgia Med. Companion.*)

"*Sosparitet.*—This is the name of a new article for the toilet, said to be composed of camphor and phenic alcohol, skillfully disguised by a combination of essential oils, glycerin, and spirit. It can be used, properly diluted, as a mouth-wash, a few drops being poured into the water with which the teeth are cleansed, in order to remove any unpleasantness of the breath arising from smoking, disordered stomach, or decayed teeth. A tablespoonful mixed with half a pint of water makes a capital hair-wash, and a couple of tablespoonfuls is a good addition to the morning bath. It seems to make an agreeable form of disinfectant for toilet use."—(*Med. Record.*)

Carbolic Acid Compounds.—Wm. C. Bakes gives, in the *Amer. Jour. of Pharmacy*, the following among other Notes on Carbolic Acid, from "The Antiseptic System—a Treatise on Carbolic Acid and its Compounds, etc.," by A. E. Sansom, M.D., of London:

"*Alcoholized Carbolic Acid* (Acide Phénique Alcoolisé).—Alcohol (90°), crystallized carbolic acid, equal parts. Mix, and keep in a well-stoppered bottle. Used for making carbolized solutions, etc. Being more fluid than carbolic acid, it more readily penetrates the tissues.

Useful in poisoned wounds, for application to smallpox pustules, etc.—(Lemaire.)

"*Etherized Carbolic Acid* (Ether Phéniqué).—Sulphuric ether, 100 parts; carbolic acid, 1 part. Used for insufflation in catarrh of Eustachian tube.—(Lemaire.)

"*Carbolized Vinegar* (Vinaigre Phéniqué).—Ordinary vinegar, 4 parts; carbolic acid, 1 part. Mix. For use, instead of aromatic vinegar, as a disinfectant, etc.—(Quesneville.)

"*Solution of Carbolic Acid for the Toilet.*—Crystallized carbolic acid, 10 parts; essence of millefleur, 1 part; tincture of Quillaya saponaria, 50 parts; water, 1000 parts. Mix. The saponine replaces soap with advantage. The above should be employed, diluted with ten times its bulk of water, for disinfecting the skin, for washing the hands after any risk of contagion or inoculation, etc.—(Lemaire.)

"*Tincture of Saponine,* as used in the foregoing preparation, is thus made: Bark of 'Quillaya saponaria,' 1 part; alcohol (90°), 4 parts. Heat to ebullition, and filter.—(Le Bœuf.)

"*Carbolized Water for the Teeth.*—Water, 1000 parts; essence of mint, 2 parts; tincture of saponine, 50 parts; pure carbolic acid, 10 parts. Mix. A dessertspoonful in a quarter of a tumblerful of water, serves as an excellent preparation for cleansing and preserving the teeth."

"*Pure Carbolic Acid.* By Professor Church, M.A.—One pound of the best carbolic acid of commerce (I use Calvert's white crystallized acid) is poured into twenty pounds of cold distilled water, taking care not to permit the *whole* of the acid to enter into solution. With a good sample, if after shaking repeatedly at intervals, between two and three ounces of the acid remain at the bottom of the vessel used, this will be a sufficient residue to hold and contain all the impurities. With bad samples, less water must be used or more acid. The aqueous solution should be syphoned off, and filtered if necessary through Swedish paper till perfectly clear; it is then placed in a tall cylinder, and pure powdered common salt added with constant agitation till it no longer dissolves. On standing the greater part of the carbolic acid will be found floating as a yellow oily layer on the top of the saline liquor, and merely requires to be removed by a syphon or pipette to be ready for use. As it contains five per cent. or more of water, it does not generaly crystallize, but it may be made to do so by removing it to a retort, and distilling it from a little lime. The portion collected up to 185° C. or thereabouts has at ordinary temperatures scarcely any odor, save a faint one resembling that of geranium-leaves; and I have taken advantage of this curious resemblance still further to mask the slight smell proper to absolutely pure carbolic acid by the addition to it of four drops per fluid-ounce of the French oil of geranium. This addition has the further advantage of liquefying the pure crystallized product."—(*Chem. News.*)

"*Dangers of Chromic Acid.*—M. Gubler remarks in the *Edinburgh Medical Journal*, that chromic acid is one of the most powerful of caustics. Only the mono-hydrous sulphuric acid at all approaches it in strength. It acts rapidly, setting free a considerable amount of heat, so that the temperature may rise to 125 or 150 degrees. If we plunge a small animal, such as a mouse, into a concentrated solution of chromic acid, it is instantly reduced to a cinder; and the ebullition is so great

that unless care be taken, the mouse and a part of the solution are forcibly ejected.

"This caustic applied over an extensive surface may therefore give rise to a deep slough. Further, the absorption of chromic acid is not free from danger, and patients have been poisoned by a too extensive application of this caustic to the surface of their bodies."—(*Med. and Surg. Reporter.*)

"*Influence of Tobacco in Diseases of Nerve-Centres.*—In the *Bulletin de l'Association Franc. cont. l'Abus du Tabac*, quoted in *The Doctor*, M. Tamisier states that out of fifty-nine grave affections of the nerve-centres observed from 1860 to 1869 among men, forty occurred in smokers. In fifteen cases of hemiplegia, nine abused tobacco, and two used it moderately; four did not smoke. Of eighteen cases of paraplegia, five were great smokers, three moderate smokers, and ten abstained from tobacco. Out of sixteen cases of locomotor ataxia, ten were great smokers, five moderate, and one abstained. Tamisier thinks that it is especially, if not wholly, to this cause that we must attribute the disease in the majority of cases of hemiplegia and of ataxia he has noticed since 1860. M. Lefevre, of Louvain, thinks it indubitable that excessive smoking causes paralytic mania; because—1. Nicotine causes in animals progressive enfeeblement of the muscles of motion up to paralysis, and congestion of the nerve-centres. 2. Analgous symptoms have been noticed in numbers of persons who abuse tobacco in smoking or chewing. 3. It has been found in all countries that there is a constant relation between the consumption of tobacco and the increase of general paralysis."—(*Med. and Surg. Reporter.*)

Alkaline and Acid Tests.—"The following beautiful chemical experiment may be easily performed by a lady, to the great astonishment of a circle at her tea-party. Take two or three leaves of red cabbage, cut them into small bits, put them into a basin, and pour a pint of boiling water on them; let it stand an hour, then pour off the liquor into a decanter. It will be of a fine blue color. Then take four wine-glasses; into one put six drops of strong vinegar, into another six drops of solution of soda, into a third the same quantity of a strong solution of alum, and let the fourth glass remain empty. The glasses may be prepared some time before, and the few drops of colorless liquids which have been placed in them will not be noticed. Fill up the glasses from the decanter, and the liquid poured into the glass containing the acid will quickly become a beautiful red, that in the glass containing the soda will be a fine green, that poured into the empty one will remain unchanged. By adding a little vinegar to the green it will immediately change to a red, and on adding a little solution of soda to the red it will assume a fine green, thus showing the action of acids and alkalies on vegetable blues."—(*Med. and Surg. Reporter.*)

"*Transparent Lacs for Glass, Mica, etc.*—F. Springmühl informs us that the aniline colors are particularly well adapted for the manufacture of transparent lacs, which possess great intensity even in very thin films, and are hence very suitable for coloring glass or mica. The process recommended is to prepare separately an alcoholic solution of bleached shellac or sandarac, and a concentrated alcoholic solution of the coloring matter, which last is added to the lac before using it, the

glass or mica to be coated being slightly warmed. Colored films of great beauty may also be obtained, according to the author, from colored solutions of gun-cotton or ether, the coloring matter being here dissolved in alcohol and ether. The collodion film has its elasticity greatly increased by the addition of some turpentine oil; and when applied cold can be removed entire. The colored films may now be cut into any pattern, and again attached to transparent objects."—(*Franklin Institute Jour.*)

"*New Gas Forge.*—The *American Chemist* contains the description of an apparatus of this kind, having the following construction: There is claimed for it a degree of heating power, sufficient to fuse bronze, copper, gold, and silver. The principle is that of the Bunsen burner (in which the burning gas is mixed with a supply of air before combustion), but differs from the ordinary burner in having the openings through which the gas enters some distance above those supplying the air. Encircling the tube through which the mixture passes is an outer tube, open above and below, by which an additional supply of air is furnished to the flame, and the draught is increased."—(*Ibid.*)

"*Nickel-plating as a Preservative of easily-corroded Metals.*—A small square bar of steel coated with nickel has been repeatedly immersed in water for hours together without showing any signs of rusting, and John Spiller, F.C.S., states, in the *Photographic News*, that he finds it possible to bury it in flowers of sulphur for several days without tarnishing the lustre of the nickel surface. Neither has this latter severe test any effect upon the copper and brass bars upon which the nickel coating has been applied, and these metals may even be immersed in an aqueous solution of nitrate of silver without effecting the reduction of that metal. In one of the angles only, where the coating seemed to be imperfect, was there any indication of silver reduction in the case of the brass tube, the steel bar being perfectly protected over the whole surface against the action of silver and copper solutions. Here, then, is a most valuable property in electro-deposited nickel. A metal of the zinc and iron group is proof against the action of nitrate of silver; the experiment proves it to be so, and we must regard pure nickel as belonging (from this point of view) to the class of noble metals, resisting, like gold and platinum, the attack of sulphur and of highly corrosive metallic solutions.

"The nickel facing, when burnished, has a whiter color than polished steel, although not equal to silver itself, its aspect being rather that of rolled platinum. It withstands the action of heat also remarkably well, for the fusion-point is very high, and oxidation occurs only at elevated temperatures. For fine balance beams and weights, lens mountings, reflectors, laboratory microscopes, Sykes's hydrometers, still-worms, egg-beaters, camera-fittings, and a variety of apparatus used by the chemist and photographer, the nickel coating will, probably, find extensive application. Oval picture-frames of very pretty effect are made of stamped brass coated with nickel. Burnished and matt surfaces of this metal may be used in combination for ornamental purposes."—(*Sci. Amer.*)

"*Electro-Deposition of Aluminium and other Metals.*—I see it stated in your 'Notes and Queries' that aluminium has not yet been de-

posited on other metals by the battery. For more than two years I have been depositing aluminium daily on iron, steel, and other metals, and driving it into their surfaces at a heat of about 500°F., in the same way as I do silver and nickel. Also I have been doing the same with the alloy of aluminium called aluminium bronze, of various tints, from the palest lemon to the richest gold color. I also deposit occasionally platinum, but it would not stand on iron and steel if deposited from the solution named by your correspondent, nor, in fact, satisfactorily on any metal which is not neutral in that solution."—(J. Baynes Thompson, White Hall, Wraysbury, Staines, *Chem. News.*)

"*Cement to resist Sulphuric Acid.* (Reply to H. R. Yardley.)—Take caoutchouc: melt this by a gentle heat, add from six to eight per cent. of the weight of tallow, taking care to keep the mass well stirred; add dry slacked lime, so as to make the fluid mass the consistency of soft paste; and lastly add twenty per cent. of red lead, whereby the mass, which otherwise remains soft, becomes hard and dry. This cement resists, according to Dr. Wagner, boiling sulphuric acid. A solution of caoutchouc in twice its weight of raw linseed oil, aided by heating, and the addition thereto of an equal weight of pipeclay, yields a plastic mass which also resists most acids."—(*Ibid.*)

"*Cleaning polished Brass.*—The first requisite is to remove all grease. This may be done with a solution of concentrated lye, and fine pumice or rotten-stone. A weak solution of muriatic acid and clean scouring-dust will then brighten it, after which it may be oiled with olive or cocoanut oil. Vinegar and common salt may be used instead of the acid. The red powder, of which G. N. K. speaks, probably contains some preparation of mercury dangerous to health, and injurious to the metal. Raw mashed sour apples will also brighten brass. I know of nothing except acids to remove oxidation, unless it be powder of some mineral and friction. I consider weak vegetable acids preferable on fine work, and vegetable oils better than animal fats.—(G. R. R., of Mass.) Take eight parts water, and one part muriatic acid; mix them, and put in common water lime, until the mixture is a little thicker than water. Shake up well before using. Pour some on a rag, and put on the brass. Let it stay a minute or two, and then rub. It will clean the dirtiest brass more quickly and better than anything else."—(H. P. M., of Conn., *Sci. Amer.*)

New Brass Solder.—"A new brass solder has been devised, having its expansion and contraction by changes of temperature, the same as those of iron or steel; or so nearly so, that it may be used to solder those metals to brass. Its composition is: tin, 3 parts; copper, $39\frac{1}{2}$ parts; zinc, $7\frac{1}{2}$ parts."—(*Boston Jour. Chemistry.*)

"*Goldlike Alloy.* Dr. E. Dingler.—This alloy consists of: copper, 58·86; zinc, 40·22; lead, 1·90. It is both inexpensive and durable as well as malleable."—(*Polytechnisches Journal* and *Chem. News.*)

CREDIT is due Dr. B. W. Richardson, and the *Med. Times and Gaz.*, for the article on "Amyl Hydride," in the last number of the DENTAL COSMOS.—Z.